Service Manual

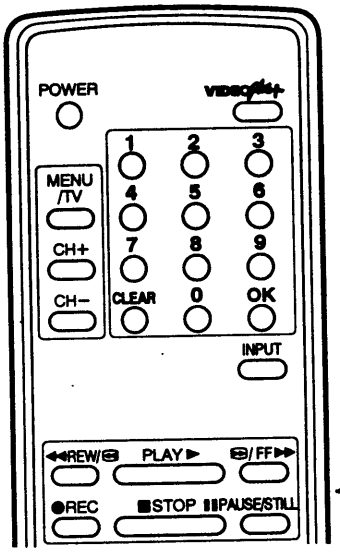
TEUKR Part No. TPH1807

Part number for Mechanism
Service Information TP30056

Video Cassette Recorder

THORN

VR412LVA



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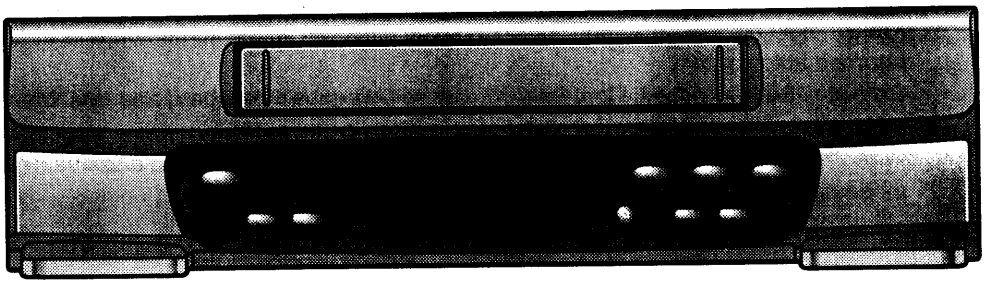

VHS PAL

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PRODUCT SAFETY NOTICE

The components designated by a symbol (⚠) in this schematic diagram designates components whose value are of special significance to product safety. Should any component designated by a symbol need to be replaced, use only the part designated in the Parts List. Do not deviate from the resistance, wattage, and voltage ratings shown.

NOTE: 1. Parts order must contain model number, part number, and description.
2. Substitute parts may be supplied as the service parts.
3. N.S.P.: Not available as service parts.

Design and specifications are subject to change without notice.

SELF-DIAGNOSIS DISPLAY

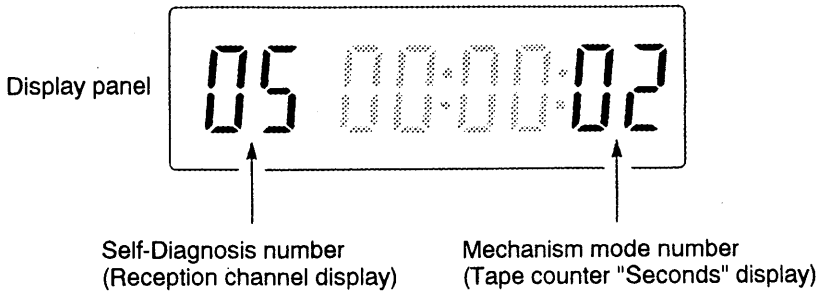
Mechanism Mode Display / Head Output Drop Warning Display / Cylinder Rotation Accumulated Time Display

This unit displays the diagnosis contents of abnormalities and the mechanism, mode on its display panel in 2-digit numbers.
When the head playback output has dropped, the "L" sign will be blinked, and this model will also display the cylinder rotation accumulated time.
These display shows the outline of the problems. Use it as a reference when servicing the unit.

1. Self-Diagnosis Contentes and Mechanism Mode Display

- When the STOP button on the remote control is pressed for about 10 seconds continuously, the self-diagnosis number will be displayed on the reception channel display of the display panel and number indicating the failed mechanism mode (changed mode when being shifted) on the tape counter "seconds" display for 10 seconds each.
- During self-diagnosis display, displays other than the diagnosis number/mechanism mode number and the cylinder accumulated rotation time display described later (some models only) will be turned off and when displays end, the normal display will be returned automatically.
- Refer to "Self-Diagnosis Contents" for the self-diagnosis numbers and the "Mechanism Mode Display Contents" for the mechanism mode numbers.
- When the "0" button on the remote control unit is pressed during display, and clearing the self-diagnosis display and mechanism mode display.

Self-Diagnosis Contents



No.	Problem	Main Possible Cause	Mechanism Operations and State After Occurrence
00	There is no abnormality in the mechanism.		
01	The cylinder motor does not rotate.	• The cylinder motor is faulty. • The control of the cylinder motor is faulty. • The tape winds around the cylinder.	Shifts to the STOP mode.
02	The take-up reel does not rotate.	• The take-up reel is caught. • The reel belt is faulty. • The take-up torque has decreased.	Shifts to the STOP mode.
03	The capstan motor does not rotate.	• The capstan motor is faulty. • The control of the capstan motor is faulty.	Shifts to the STOP mode.
04	The tape cannot be loaded with the cassette inserted. (But unloading can be performed.)	• Error in the operations of the tape loading mechanism. • Foreign particles in the tape loading mechanism. • The tape end sensor is faulty. • The reel brake of the tape cassette has not been released.	Unloads, shifts to the INITIAL mode, and the power goes off.
05	Tape loading and unloading cannot be performed with the cassette inserted.	• The tape guide is caught. • The loading motor is faulty. • The control of the loading motor is faulty.	The power is forcibly turned off with the mechanism at its current position.

No.	Problem	Main Possible Cause	Mechanism Operations and State After Occurrence
06	Front unloading cannot be performed when ejecting the cassette. (Front loading can be performed.)	• The cassette drive mechanism is faulty. • The front door is caught.	Front loads and shifts to the STOP or INITIAL mode. • When the power switch is turned on before eject operations: Shifts to the STOP mode. • When the power switch is turned off before eject operations: Shifts to the INITIAL mode and the power goes off.
07	Front loading and front unloading cannot be performed when ejecting the cassette.	• The tape cassette is caught in the cassette drive mechanism. • The main cam and front rack gear of the front loading mechanism have not engaged properly. • The gears of the front loading drive mechanism have not engaged properly.	The power is forcibly turned off with the mechanism at its current position.
08	The mechanism becomes 1 (REVIEW) while moving from 2 (IDLER), 3 (STILL), 4 (BRAKE), and to 5 (STOP).	• The mechanism mode switch contact is faulty.	The power is forcibly turned off with the mechanism at its current position.
09	The mechanism becomes 7 (INITIAL) while moving from 1 (REVIEW), 2 (IDLER), 3 (STILL), 4 (BRAKE), and to 5 (STOP).	• The mechanism mode switch contact is faulty.	Carries out tape take-up operations, shifts to the INITIAL mode, and the power goes off.

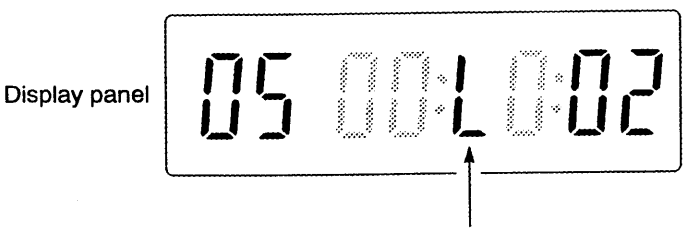
Note: For details of mechanism operations corresponding to the mechanism positions of the self-diagnosis numbers 08 and 09 above, refer to the separate volume on the V95 I mechanism manual. These manual reference numbers are shown in the cover.

Mechanism Mode Display Contents

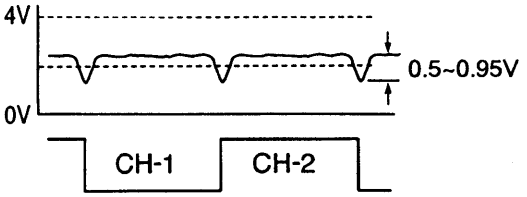
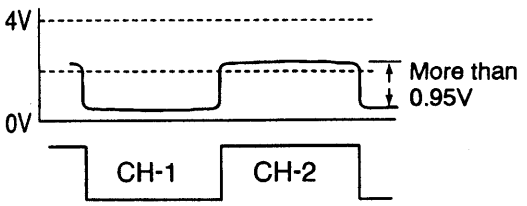
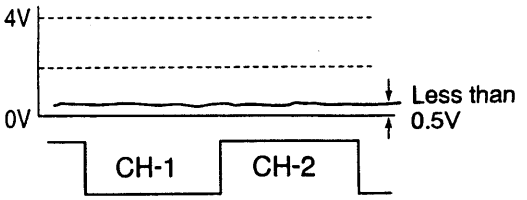
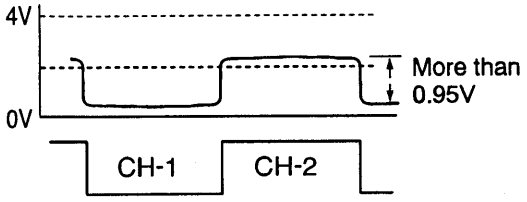
Mode No.	Mechanism Mode	Mode No.	Mechanism Mode	Mode No.	Mechanism Mode
00	CASSETTE OUT	08	PLAY	16	VIDEO INSERT
01	STANDBY	09	REC	17	VIDEO INSERT-PAUSE
02	STOP	10	AUDIO DUBBING	18	AUDIO/VIDEO INSERT
03	STILL	11	X2 SPEED PLAY	19	REVERSE X2 SPEED PLAY
04	REC-PAUSE	12	CUE		
05	AUDIO DUBBING-PAUSE	13	REVIEW		
06	FRAME ADVANCE	14	FAST FORWARD		
07	SLOW	15	REWIND	99	OTHERS

2. Head Output Drop Warning Display

- When the STOP button on the remote control is pressed for 10 seconds continuously 10 seconds after play starts, "L" will be displayed blinking at the first digit of the minutes position on the tape counter when the head output is lower than the specified value to indicate an abnormality.
- The cause of the abnormality may be due to drop in the playback output caused by drop in the efficiency of the cassette used or head clogging. Refer to "Head Playback Output Voltage Check" as a means to judge the abnormality.

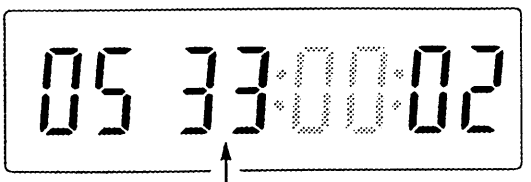


Head playback output voltage check

Cassette Used	Warning Display	Envelope Detection Output Voltage	Main Cause
Cassette with normal playback output	–	Envelope detection output (IC301 Pin 25 or C3016 HOT side: see Fig. 2-1-1) Switching pulse (TP183: see Fig. 2-1-2) 	When the output voltage difference of the two channels is 0.5 to 0.95V • The video heads of both are normal
Recorded cassette (with tabs)	"L" blinking	Envelope detection output (IC301 Pin 25 or C3016 HOT side: see Fig. 2-1-1) Switching pulse (TP183: see Fig. 2-1-2) 	When the output voltage difference of the two channels is more than 0.95V • Tracking adjustment has not been performed accurately • One video head is clogged • One video head has worn out
	"L" blinking	Envelope detection output (IC301 Pin 25 or C3016 HOT side: see Fig. 2-1-1) Switching pulse (TP183: see Fig. 2-1-2) 	When the average output voltage of the two channels is less than 0.5V • Tracking adjustment has not been performed accurately • Both video heads are clogged • Both video heads have worn out
Rental cassette (without tabs)	"L" blinking	Envelope detection output (IC301 Pin 25 or C3016 HOT side: see Fig. 2-1-1) Switching pulse (TP183: see Fig. 2-1-2) 	When the output voltage difference of the two channels is more than 0.95V • Tracking adjustment has not been performed accurately • One video head is clogged • One video head has worn out
	• Some rental cassettes may have extremely low video playback outputs even when both video heads are normal. As the average output voltage of the two heads may be less than 0.5V for some, no warning displays will be shown.		

3. Cylinder rotation accumulated time display

- Press the STOP button on the remote control for approximately 10 seconds and the cylinder rotation accumulated time excluding the cassette out and standby operation time will be displayed on the "Hours" display in units of 100 hours. ("33" will be displayed for 10 seconds for 3,200 to 3,299 hours.)
- To erase the cylinder rotation accumulated time display, press the RESET button on the remote control during the accumulated time display.

Display panel 

Cylinder rotation accumulated display (Tape counter "Hours" display)

1. DISASSEMBLY

1-1. REMOVAL OF CABINET, MECHANISM UNIT, AND MAIN BOARD

REMOVING THE CABINET PARTS (Fig. 1-1-1)

1. Remove the cabinet and bottom cover by removing the four screws ① and four screws ②.
2. Remove the front panel by removing the locks of the clamps (A) using a screwdriver, etc. and slightly rotating the bottom part in the direction of the arrow.

Notes: • Electrical adjustments for the this model can be performed with only the cabinet removed.
• When replacing the bottom cover, do not tighten the screws ② too much. Excess tightness may damage the screws taps on the chassis.

REMOVING THE MECHANISM MAIN UNIT AND THE CP-1 PWB ASSEMBLY (Fig. 1-1-2 and 1-1-3)

After removing the cabinet parts, remove the mechanism unit and the CP-1 PWB assembly connected as follows.

1. Spread out the lock clamps (C) in the arrow direction slightly and remove the TM-1 PWB as shown in Fig. 1-1-2.
2. Remove the screw ④ at the back of the chassis.
3. Remove the red screw ⑤ in the chassis, remove the red screw ⑥, and remove the holder 1 in this order.
4. Remove the holder 2 by removing the screw ⑦.
5. Remove the two screws ⑧ and two screws ⑨ of the mechanism unit. The two screws ⑨ of the cassette tray can be removed easily by pushing the tray lock lever in the arrow direction to remove the lock as shown in the enlarge view A and by pushing the lid opener lever in the arrow direction to remove the lock as shown in the enlarge view B.
6. Lift up the whole mechanism unit and main board (CP-1 PWB assembly), and as shown in Fig. 1-1-3, push the two lock clamps (D) of the chassis in the arrow direction so that they can be removed from the chassis.

M-PP2L/ETH-1

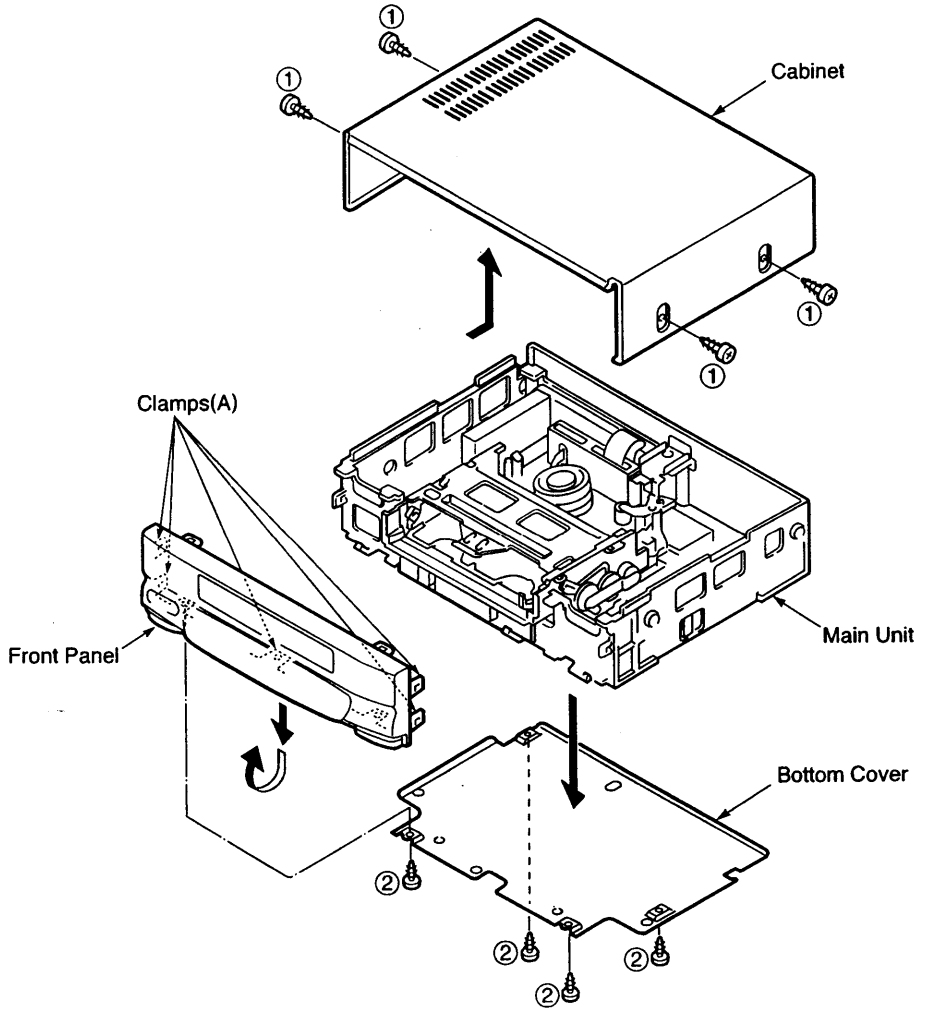


Fig. 1-1-1

PP2L/ETH-2

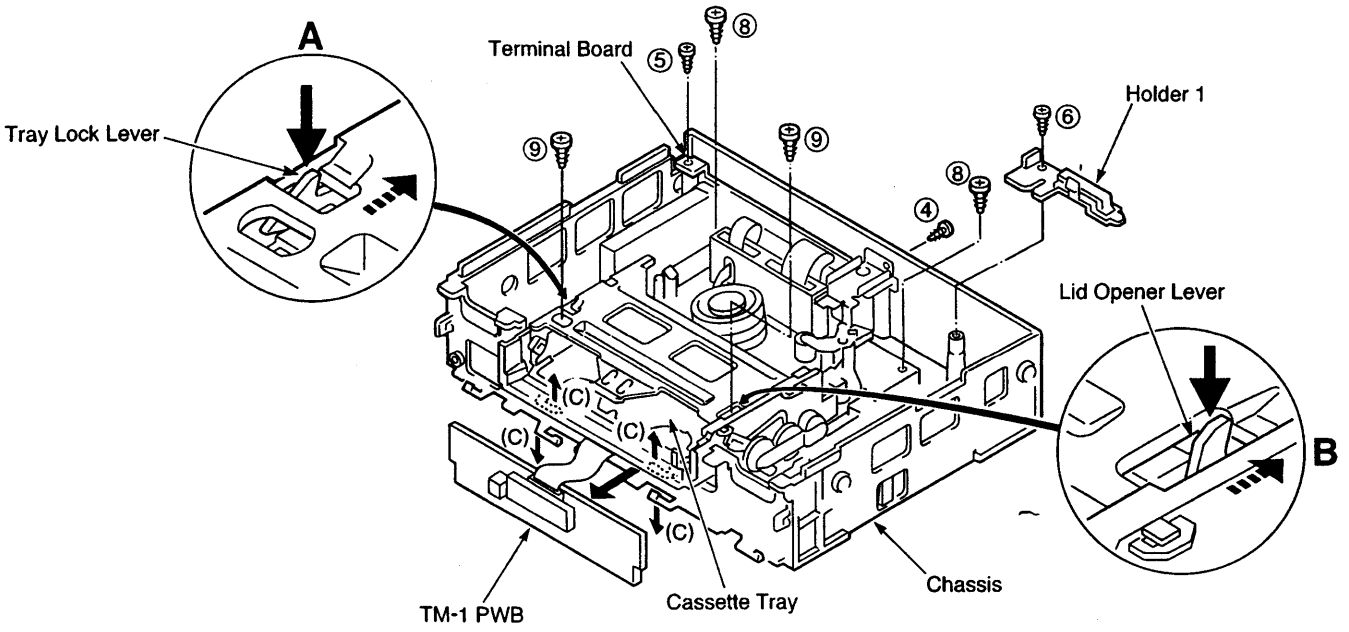


Fig. 1-1-2

M-PP2/G5-3

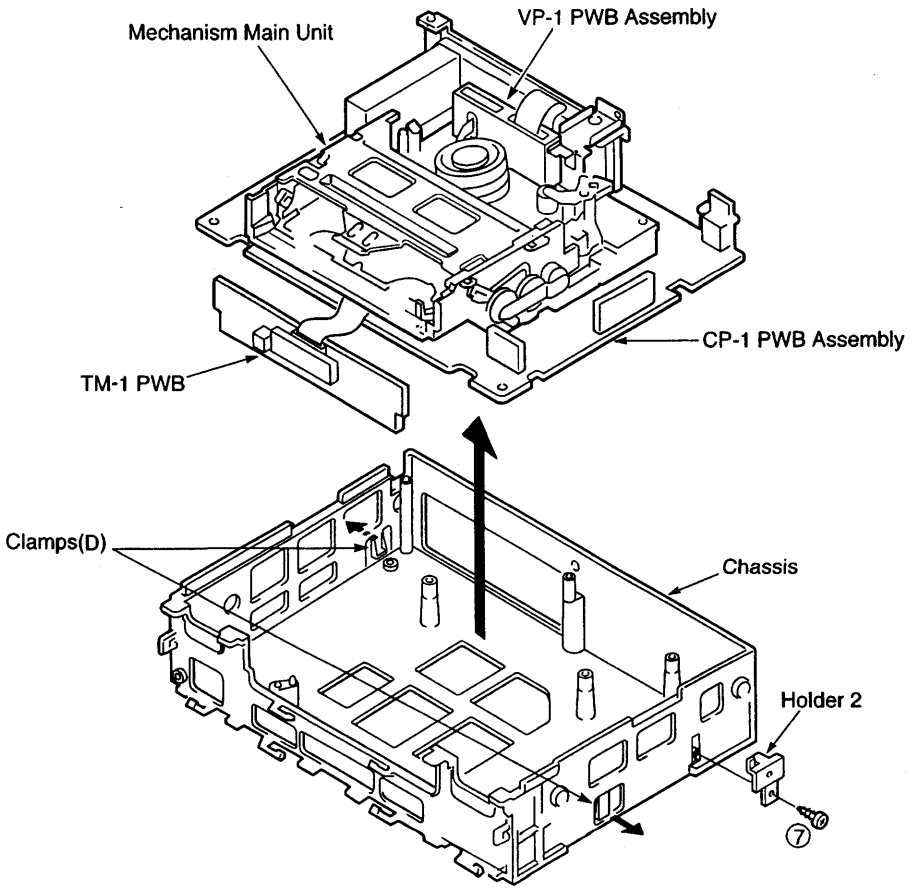


Fig. 1-1-3

1-2. TEMPORARILY SETTING UP AND CONNECTING CP-1 PWB ASSEMBLY

The following is an example of how to place and connect the main board without a jig, when repairing the CP-1 PWB assembly.

1. Place the mechanism unit and main board up side down as a whole on a flat surface with foil side of the main board facing up.
2. Operete the unit using the buttons on TM-1 PWB or the remote control.

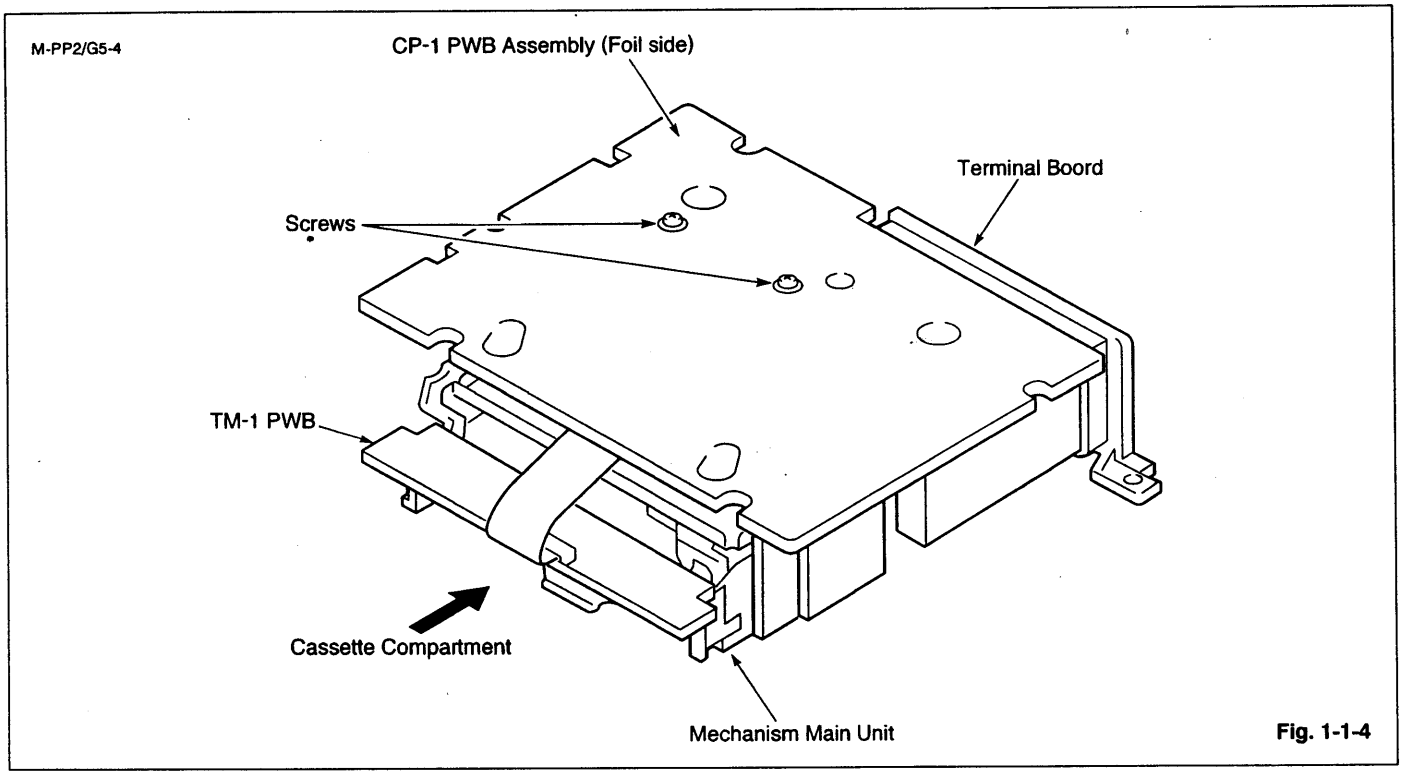


Fig. 1-1-4

1-3. INSTALLATION OF THE FRONT PANEL

When installing the front panel to the chassis after repaires and adjustments.

1. Pressing down the door opener lever of the mechanism main unit.
2. Set the cassette door to half-opened state as shown in Fig. 1-1-5, and install the front panel to the chassis.

Note: Opened cassette door position does not install the front panel to the chassis.

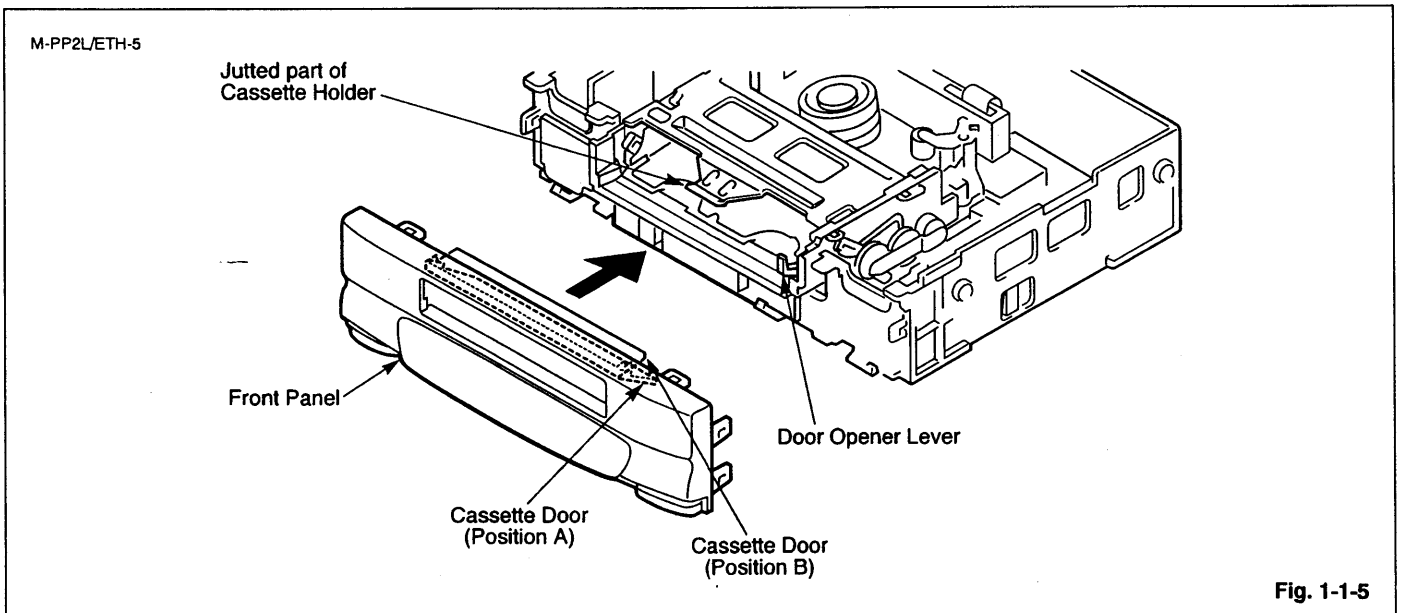
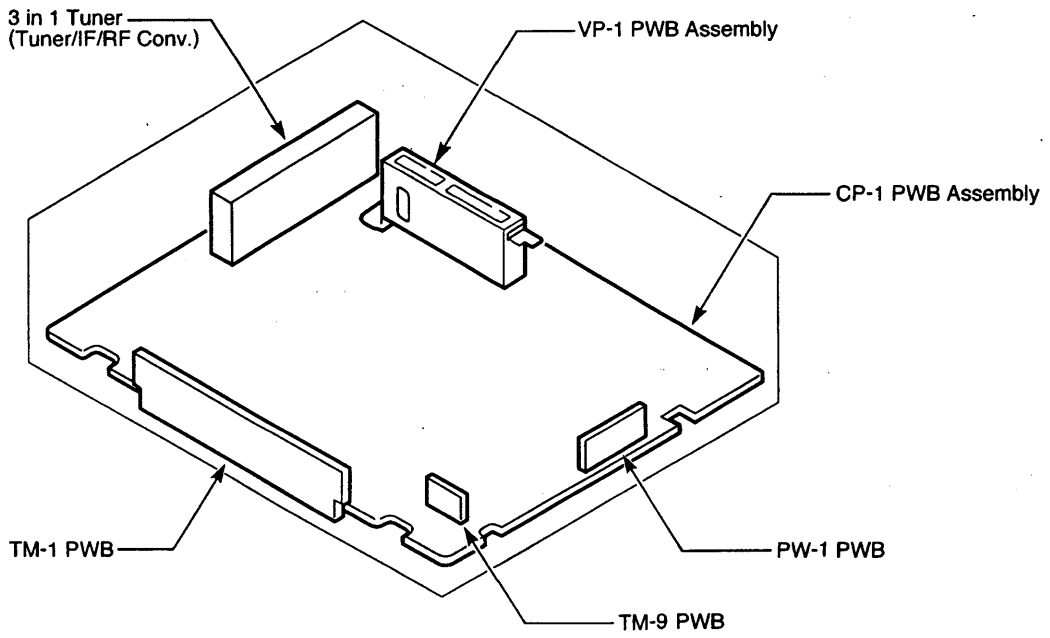


Fig. 1-1-5

1-4. CIRCUIT BOARD LOCATIONS

L-PP2L/ETH



2. ELECTRICAL ADJUSTMENT

VCR PRESETTING

This VCR need three basic presetting by using the menus displayed on-screen. After all connection have been made, then follow steps 1 to 3 to preset the VCR.
The three presetting steps will be displayed in sequence on TV screen. The setting are entered with the remote control.

Turn on the VCR

1. Adjusting the TV receiver to the video channel: The AUTO SETUP screen will appear. When the video channel has been preset, press the OK button on the remote control.
2. Country selection: Using the numeric button, select the country of use.
3. Language selection: When the desired language has been select, press the MENU/TV button directly before prevent auto tuning will start.

When steps 1 to 3 have been finish, ready to operate the all operating mode.

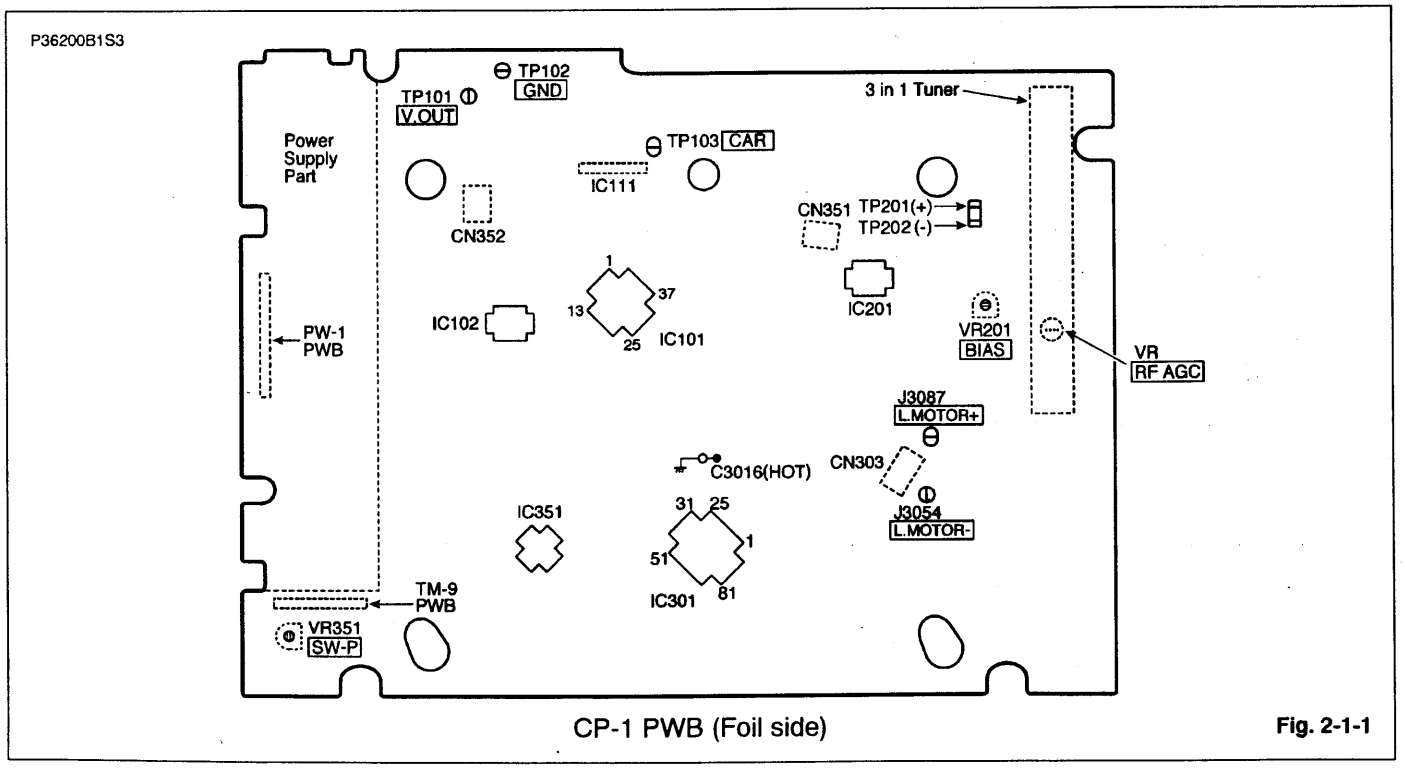
2-1. SERVO CIRCUIT ADJUSTMENT

- These adjustments should be done upon completion of the tape transport adjustments.
- If the tape transport adjustments (except the tilt adjustment) are done after these adjustments, follow the procedures again in section 2-1-3, "switching position adj."
- When a cassette tape is loaded, auto-tracking will be set immediately after starting the first playback. As this will daviate the tracking center set, be sure to press the channel buttons (▲) or (▼) once directly after starting playback to prevent auto-tracking from being set.

2-1-1. TEST EQUIPMENT AND STANDARDS REQUIRED

Oscilloscope	Vertical sensitivity Bandwidth	: 5 mV/DIV, external trigger : more than 10 MHz
Alignment Tape	VHJ-0009 or VHJ-0023	: SP mode, monoscope, 6 KHz
Blank Tape	VHS-type cassette tape	
Monitor TV		

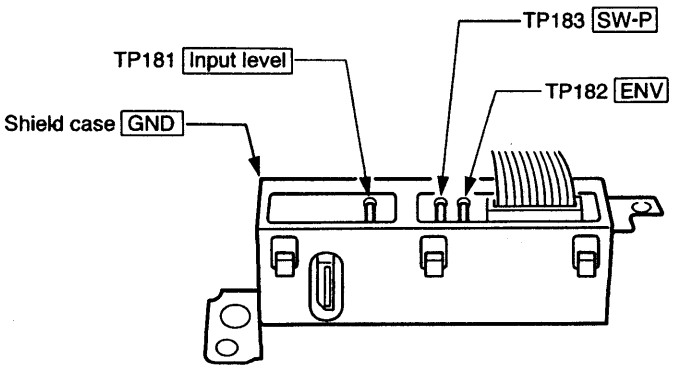
2-1-2. LOCATION OF ADJUSTMENT POINTS



CP-1 PWB (Foil side)

Fig. 2-1-1

P36000D



VP-1 PWB Assembly

Fig. 2-1-2

Note:

- Self-recording means "Record any broadcasting or video signal and play back the just-recorded portion."

2-1-3. SWITCHING POSITION ADJ.

Measuring Point	Measuring Equipment	Adj. Condition
TP101 (VIDEO OUT) TP183 (SW-P)	Oscilloscope	PLAY mode Alignment tape (VHJ-0009 or VHJ-0023)

Adj. Location	Adj. Value
VR351 (SW-P)	6.5 H ± 0.5 H

1. Play back the alignment tape.
2. Set the tracking control position to the center by pressing CHANNEL buttons (▲) and (▼) simultaneously.
3. Adjust VR351 (SW-P) so that the width of "T" becomes 6.5 H ± 0.5 H as shown in Fig. 2-1-3.

WS-SWP

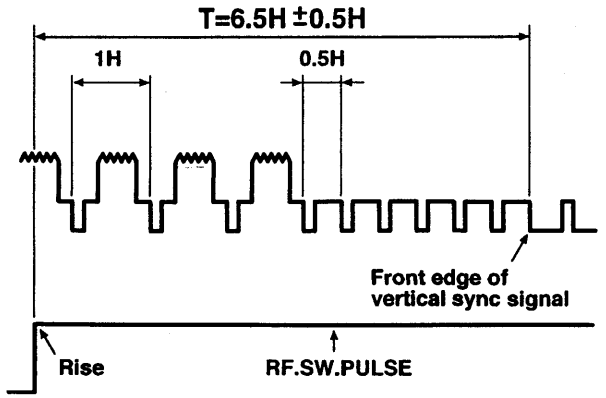


Fig. 2-1-3

2-1-4. STILL V-LOCK ADJ

Measuring Point	Measuring Equipment	Adj. Condition
Picture of monitor TV	Color bar generator or broadcasting monitor	Self-recording (SP mode) Blank tape

Adj. Location	Adj. Value
CHANNEL (▲) button CHANNEL (▼) button	The minimum vertical shake

1. Play back the just-recorded portion and then set the VCR in the STILL mode.
2. Press the CHANNEL (▲) button or the CHANNEL (▼) button so that any vertical shake of the picture is minimized.

2-2. VIDEO CIRCUIT ADJUSTMENT

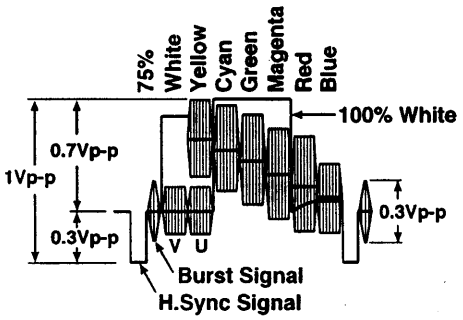
- In this model, video circuit adjustments are not performed. To check whether operations are normal, check the AGC level and PB-Y level using the following method.
- Use the adjustment relay jig to provide simple repairing of the VP-1 PWB assembly.

2-2-1. TEST EQUIPMENT AND STANDARDS REQUIRED

Color Bar Signal Generator	PAL Color bar signel with 100% white level (EBU color bar signel)
Oscilloscope	Vertical sensitivity : 5 mV/DIV, external trigger Bandwidth : more than 10 MHz
Oscilloscope Probe	Input capacity : less than 25 pF (10:1) less than 40 pF (1:1) Covering frequency : DC ~ 40 MHz (10:1) DC ~ 30 MHz (1:1)
Digital Voltmeter	DC range
Alignment Tape	VHJ-0008 or VHJ-0023 : SP mode, color bar, 1 kHz (Color bar signal waveform is described below. Refer to Fig. 2-2-1)
Adjust Relay Jig	VHJ-0065 : 5-wire flat cable for VP-1 PWB assembly

ALIGNMENT TAPE COLOR BAR SIGNAL

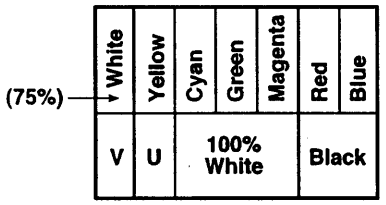
WPV-TCS



Color bar signal waveform (VHJ-0008)

Fig. 2-2-1

WPV-TCP



Color bar pattern (VHJ-0008) on monitor TV

Fig. 2-2-2

ADJUSTMENT RELAY JIG

Connect the flat cable end from the cylinder assembly to the VP-1 PWB assembly using the relay jig to provide simple repairing or adjustment of the VP-1 PWB assembly, as shown in Fig. 2-2-3. Further, when adjusting the VP-1 PWB assembly, be sure to make contact an end of shield case with bracket of the VP-1 PWB assembly to maintain the shield effect. If the VP-1 PWB assembly does not contact, there is insufficient ground and no proper play back image can be obtained.

RJ-PP2L

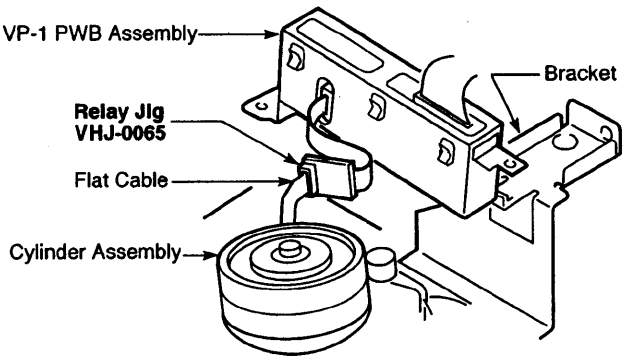


Fig. 2-2-3

2-2-2. LOCATION OF TEST POINTS

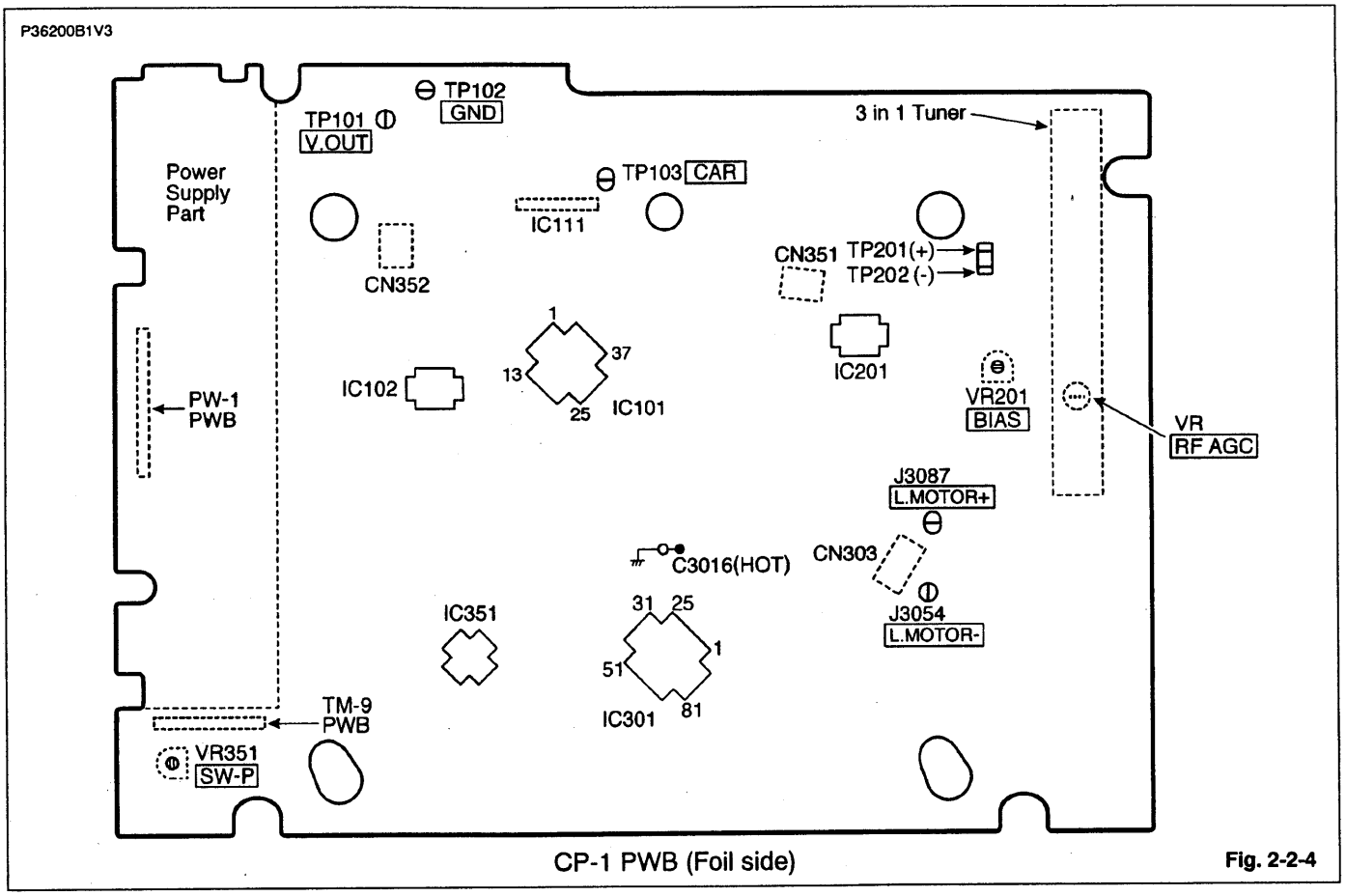


Fig. 2-2-4

2-2-3. AGC LEVEL CHECK

Measuring Point	Measuring Equipment	Adj. Condition
IC 101 pin 46	Color bar generator Oscilloscope (10:1 probe)	E-E mode

Adj. Location	Specified Value
–	0.5 Vp-p ± 0.05 Vp-p

1. Connect the color bar generator to the video input terminal.
2. Make sure that the AGC level is 0.5 Vp-p ± 0.05 Vp-p as shown in Fig. 2-2-5.

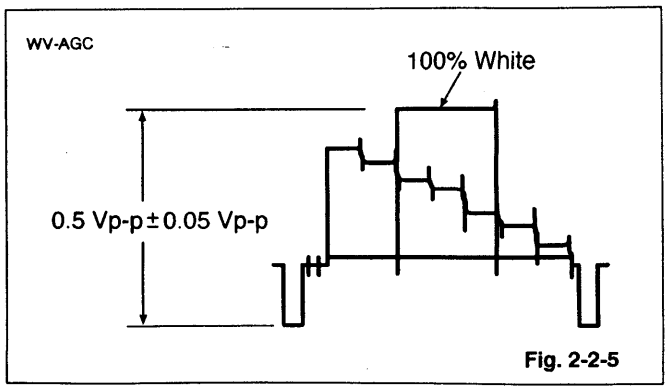


Fig. 2-2-5

2-2-4. PB-Y LEVEL CHECK

Measuring Point	Measuring Equipment	Adj. Condition
TP101 (VIDEO OUT)	Oscilloscope	PLAY mode Alignment tape (VHJ-0008 or VHJ-0023)

Adj. Location	Specified Value
–	1 Vp-p ± 0.1 Vp-p

1. Terminate the video output terminal with a 75Ω resistor.
2. Make sure that the video luminance signal level is 1 Vp-p ± 0.1 Vp-p. (Refer to Fig. 2-2-6)

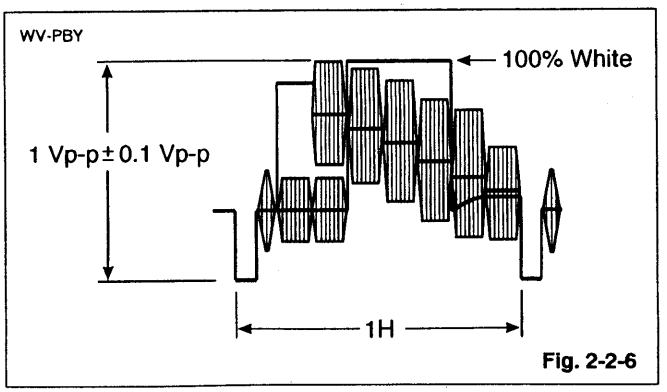


Fig. 2-2-6

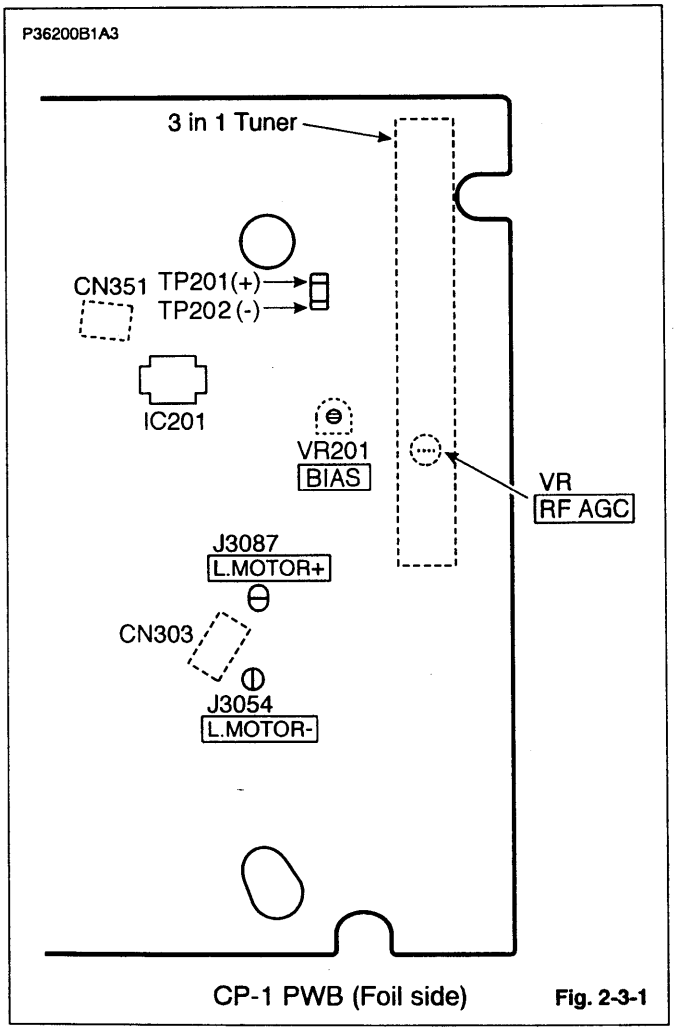
2-3. AUDIO CIRCUIT ADJUSTMENT

- Before making these adjustments, be sure to make the adjustments described in the tape path adjustment, especially the ACE heads adjustments (refer to the separate volume "Mechanism Manual") so that the tape traveling between the supply side guide roller and loading guide post runs without fluttering or curling.
- Before making these adjustments (except the ACE heads adjustments), be sure to make the adjustments described in section 2-1. "Servo Circuit." and section 2-2. "Video Circuit."

2-3-1. TEST EQUIPMENT AND STANDARDS REQUIRED

Oscilloscope	Vertical sensitivity Bandwidth	: 10 mV/DIV : more than 30 MHz
AC Voltmeter	Effective value indication Input frequency Input impedance Measurement level	 : 10 Hz ~ 20 kHz : more than 1 MΩ : 1 mV (full scale)
Frequency Counter	Input frequency	: 20 Hz ~ 10 MHz
Blank Tape	VHS-type cassette tape	

2-3-2. LOCATION OF ADJUSTMENT POINTS



CP-1 PWB (Foil side) **Fig. 2-3-1**

2-3-3. BIAS LEVEL ADJ.

Measuring Point	Measuring Equipment	Adj. Condition
TP201 (HOT) TP202 (COLD)	Oscilloscope AC voltmeter Frequency counter	REC (SP) mode Blank tape

Adj. Location	Adj. Value
VR201 (BIAS)	26 mVrms

1. Load the VCR with a blank tape and select the REC (SP) mode without all incoming signal.
2. After confirming on the oscilloscope that a 70 kHz ± 5 kHz sine wave is being output, adjust VR201 (BIAS) so that the AC voltmeter's reading is 26 mVrms.

2-4. IF CIRCUIT ADJUSTMENT

- In this model, the circuits of the TUNER, IF, and RF converter have been made into one. Therefore, should one circuit malfunction, the whole unit must be replaced.
- The adjustments for the IF (RF AGC) circuit of the 3 in 1 tuner are described below.

Note: The 3 in tuner dose not need any adjustments, because precise adjustments were down before shipment.

2-4-1. TEST EQUIPMENT AND STANDARD REQUIRED

Monitor TV	

2-4-2. LOCATION OF ADJUSTMENT POINT

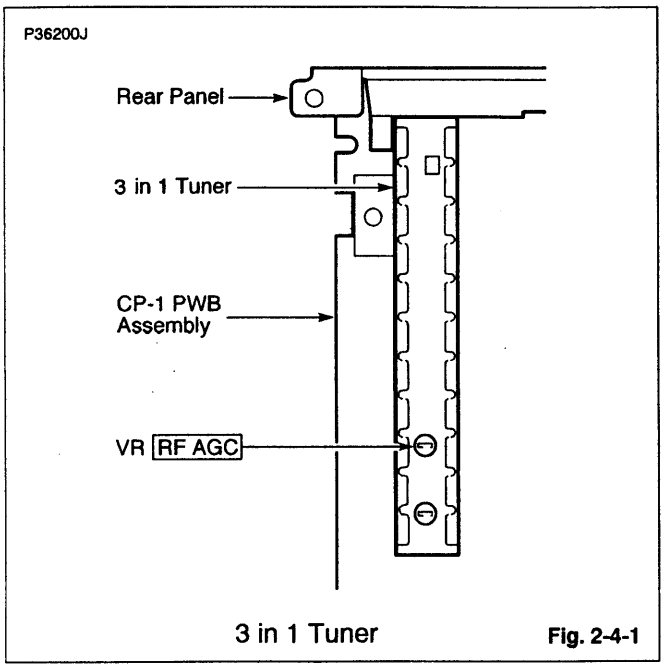


Fig. 2-4-1

2-4-3. RF AGC ADJ.

Measuring Point	Measuring Equipment	Adj. Condition
Picture of monitor TV	Monitor TV	E-E mode

Adj. Location	Adj. Value
VR (RF AGC) (on the 3 in 1 tuner)	S/N is best point

1. Connect the monitor TV to the UHF antenna output terminal.
2. Connect the UHF antenna to the UHF antenna input terminal.
3. Receive the middle electrical field (70 dBμ ~ 90 dBμ) of the UHF channel, and slowly turn the VR (RF AGC) from the point where snow-noise is present to the point where it just disappears from the monitor TV.
4. Confirm by monitor TV that there is no beat and saturation (S/N is best point) when receiving any TV channel.

3. TEST POINTS FOR TAPE PATH ADJUSTMENT

Test points TP182 (ENV) and TP183 (SW-P) for tape path adjustment are shown in figure below.
For adjustment, refer to the Mechanism Service Information TP30056.

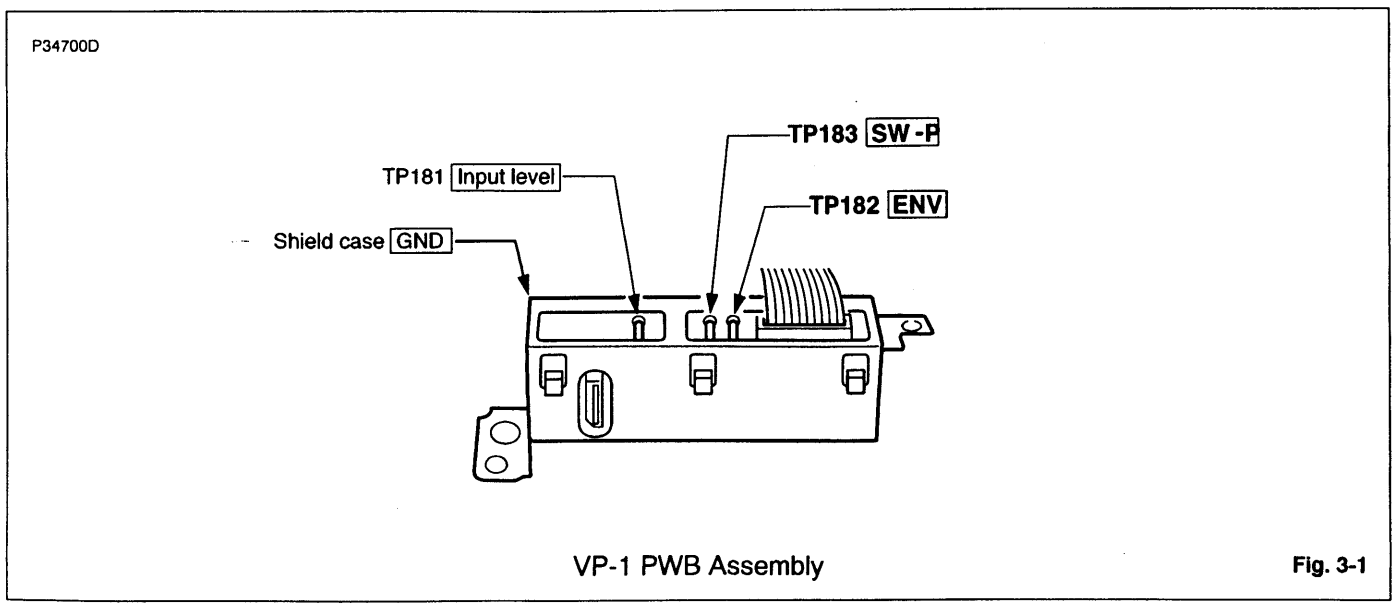


Fig. 3-1

4. PARTS LIST

LOCATION		PARTS NO.	DESCRIPTION
ACCESSORIES			
		645 018 7483	REMOCON,INFRARED (WITH COVER BATTERY)
		613 169 4385	COVER,BATTERY(FOR REMOCON)
		613 171 9705	INSTRUCTION MANUAL
		613 077 4415	CABLE,ANT
OR		613 132 6125	CABLE,ANT
OR		645 003 1182	CABLE,ANT PAL
OR		645 003 3711	CABLE,ANT PAL
OR		645 009 4569	CABLE,ANT PAL
	⚠	613 136 6411	CORD,POWER
OR	⚠	645 011 4335	CORD,POWER
		613 134 3054	PAD FOR CORD,POWER

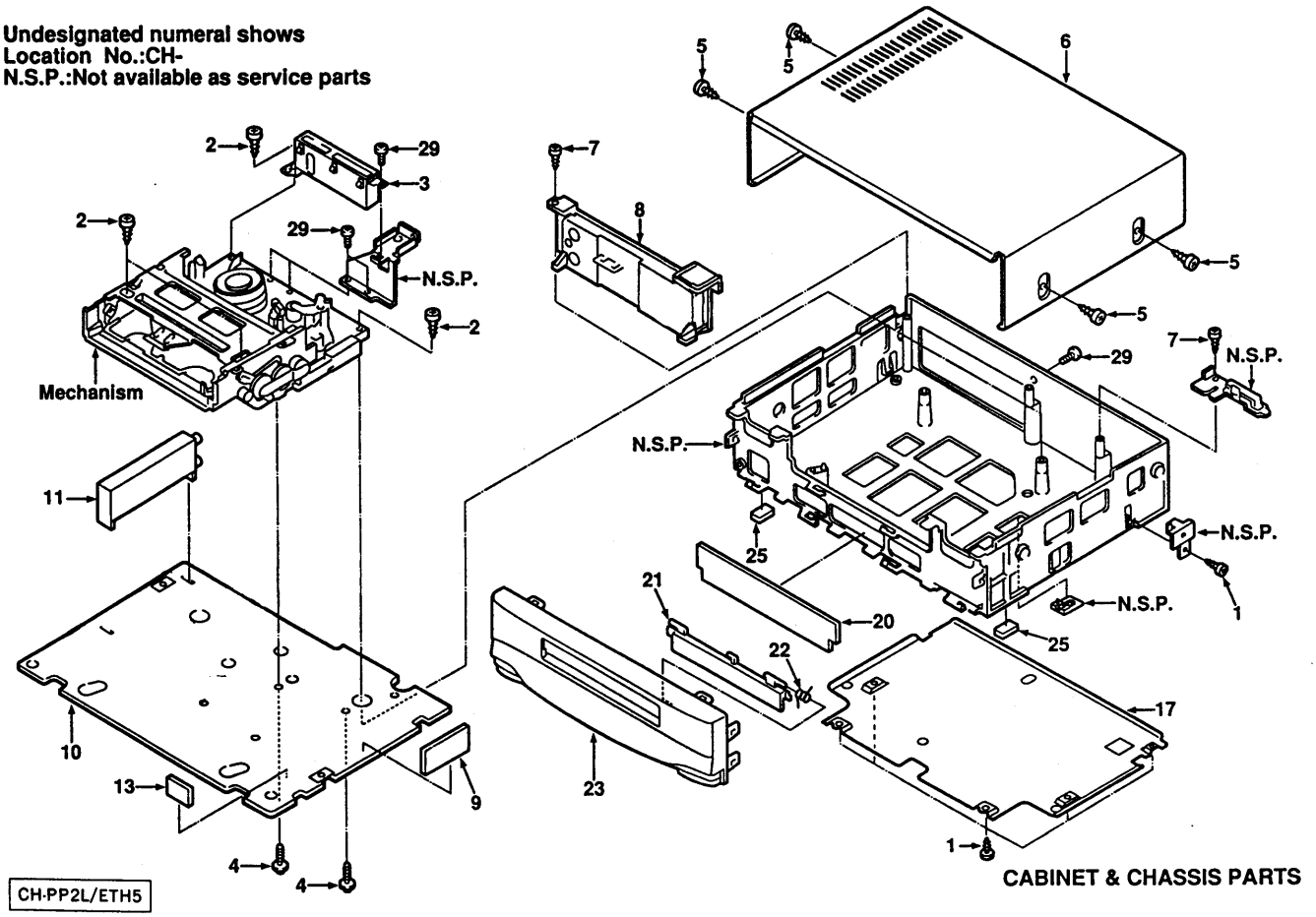
****

PACKING MATERIALS

613 171 9682	CARTON CASE
613 166 7105	CUSHION,FRONT
613 166 7112	CUSHION,BACK
613 099 1768	POLYE COVER,INNER-K

LOCATION	PARTS NO.	DESCRIPTION
CABINET & CHASSIS PARTS		
CH-1	411 137 0007	SCR L-TPG BIN 3X10
CH-2	411 021 7907	SCR S-TPG BIN 4X12
CH-3	613 171 8746	COMPL PWB,VP-1
CH-4	412 052 5108	SPECIAL SCREW-2.6X12
CH-5	412 028 9406	SPECIAL SCREW
CH-6	613 161 2952	COVER TOP
CH-7	411 021 3800	SCR S-TPG BIN 3X10
CH-8	613 160 6401	TERMINAL
CH-9	613 160 3615	COMPL PWB,PW-1
CH-10	613 171 9132	COMPL PWB,CP-1-A
CH-11	645 019 2296	TUNER,RF/TU/IF
CH-13	613 158 5751	COMPL PCB,TM-9
CH-17	613 160 5091	COVER BOTTOM
CH-20	613 160 8030	COMPL PWB,TM-1
CH-21	✗613 171 9484	DOOR CASSETTE
CH-22	613 153 0478	SPRING
CH-23	✗613 172 6956	ASSY,CABINET FRONT
CH-25	613 121 1001	STAND,FELT,FRONT
CH-29	411 001 1901	SCR S-TPG BIN 3X6

Undesignated numeral shows Location No.:CH-
N.S.P.:Not available as service parts



CABINET & CHASSIS PARTS

MECHANISM PARTS

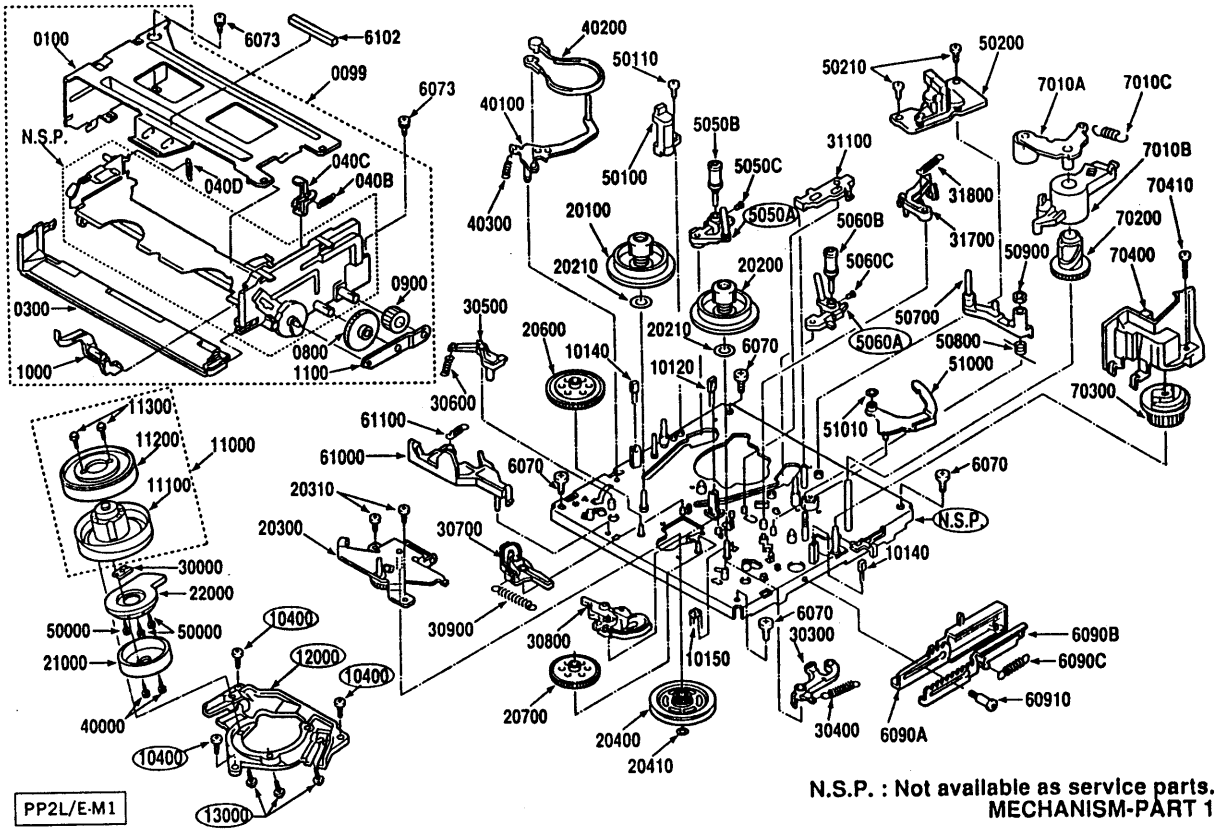
NOTE

1. This model uses two types of mechanism-the V95 I mechanism and V95 II mechanism shown in Fig A and Fig B. These mechanism can be differentiated by whether the Location Number 12000 mounting cylinder is equipped or not. The mechanism with the mounting cylinder is the V95 I mechanism, and the one without is the V95 II mechanism.
2. Parts marked with(#A) under DESCRIPTION in the parts list are for the V95 I mechanism, while those marked(#B) are for the V95 II mechanism.
3. Take note that(#A) and (#B) parts have no interchangeability.

LOCATION	PARTS NO.	DESCRIPTION
MECHANISM PARTS 1		
11000	613 142 9529	COMPL,CYLINDER,2N2P-L
OR	613 137 5789	COMPL,CYLINDER,2N2P-L
11100	613 108 6241	ASSY,CYLINDER,LWR 2AL
OR	613 113 1354	ASSY,CYLINDER,LWR 2AL
11200	613 087 6867	ASSY,CYLINDER,UPR 2N2P-L
OR	613 078 8689	ASSY,CYLINDER,UPR 2N2P-L
11300	411 038 1608	SCR PAN+W 3X8
12000	613 155 0759	MOUNTING,CYLINDER (#A)
OR	613 159 8980	MOUNTING,CYLINDER (#A)
13000	412 048 8601	SPECIAL SCREW-2.6X7 (#A)
OR	411 047 4805	SCR PAN+FLG 2.6X6 (#A)
21000	613 022 4019	ROTOR,MOTOR CYL
22000	645 008 4454	MOTOR,STATOR,CYL DC 2W
30000	613 081 4036	SPACER,MOTOR
40000	412 036 5001	SPECIAL SCREW 2.3X6
OR	412 036 0808	SPECIAL SCREW 2.3X6
50000	412 036 4905	SPECIAL SCREW 2.3X10
OR	412 036 0709	SPECIAL SCREW 2.3X10
0099	613 152 0578	COMPL,CASSETTE MECHANISM
0100	613 152 0738	STAND,L
0300	613 152 0660	FRAME,UNDER
040B	613 152 0417	SPRING,LID OPENER
040C	613 152 0707	LEVER,RELEASE
040D	613 152 0424	SPRING,TRAY LOCK
0800	613 152 2794	GEAR,LOCK
0900	613 152 2800	GEAR,PINION
1000	613 151 9480	LEVER,DOOR OPENER
1100	613 151 9299	HOLDER,GEAR
6070	411 021 7907	SCR S-TPG BIN 4X12
6073	412 048 8205	SPECIAL SCREW-2.6X6
6102	613 151 6618	PAD
10120	407 162 1102	LED LN59L,(D8003)
10140	407 162 8705	PHOTO DIODE PN263L-(NC)
10150	407 043 0101	PHOTO DIODE ON2170-R
OR	407 165 8108	PHOTO COUPLE SG-105F
10400	412 048 8106	SPECIAL SCREW-2.6X8 (#A)
OR	412 052 6204	SPECIAL SCREW-2.6X5.5 (#B)
20100	613 160 5503	ASSY,REEL SUPPLY
20200	613 160 4193	ASSY,REEL TAKE UP
OR	613 168 1514	ASSY,REEL TAKE UP
20210	412 021 5306	SPECIAL WASHER 3.1X6X0.3
OR	412 015 8900	SPECIAL WASHER 3.1X6X0.4
OR	412 015 8504	SPECIAL WASHER 3.1X6X0.5
20300	613 151 8889	COMPL,MOUNTING CLUTCH
OR	613 171 6896	COMPL,MOUNTING CLUTCH
20310	412 048 7505	SPECIAL SCREW-2.6X4
20400	613 151 9701	PULLEY,REEL
20410	412 045 4606	SPECIAL WASHER 2.4X6X0.25
20600	613 152 2749	GEAR,REEL S
20700	613 152 2756	GEAR,REEL T
30300	613 160 3356	ASSY,BRAKE SOFT T
30400	613 152 0295	SPRING,SOFT T
30500	613 151 9411	LEVER,SOFT S
30600	613 152 0318	SPRING,SOFT S
30700	613 160 6166	ASSY,BRAKE,S
30800	613 159 2193	ASSY,BRAKE T
30900	613 163 6996	SPRING,BRAKE
31100	613 152 0189	SLIDE,ACT BRAKE T
31700	613 151 8490	ASSY,BRAKE CAPSTAN
31800	613 152 0356	SPRING,BRAKE CAPSTAN
40100	613 151 8759	ASSY,LEVER,BT
40200	613 160 5282	ASSY,BRAKE,BAND
40300	613 152 0271	SPRING,BT
50100	645 008 9749	HEAD,ERASE FULL
OR	645 017 6432	HEAD,ERASE FULL
50110	412 048 9707	SPECIAL SCREW-2.6X10
50200	645 008 5192	ASSY,HEAD,R/P ACE
OR	645 017 6401	ASSY,HEAD,R/P ACE
50210	412 052 3500	SPECIAL SCREW 2.6X12
5050A	613 151 8858	ASSY,MOUNTING,INCLINE S (#A)
OR	613 164 7237	ASSY,MOUNTING,INCLINE S (#B)
5050B	613 022 0233	ASSY,GUIDE,ROLLER
5050C	412 048 4504	SPECIAL SCREW-2X3
5060A	613 151 8872	ASSY,MOUNTING INCLINE T (#A)
OR	613 164 7251	ASSY,MOUNTING INCLINE T (#B)
5060B	613 022 0233	ASSY,GUIDE,ROLLER
5060C	412 048 4504	SPECIAL SCREW-2X3
50700	613 164 4762	ASSY,LEVER,LOAD
50800	613 152 0387	SPRING,LEVER L GUIDE
50900	412 048 8908	SPECIAL NUT-3X3
51000	613 161 2365	ASSY,LEVER,ACT L GUIDE
51010	412 033 4106	WASHER SLIT 2.6X5X0.50
51100	613 160 7057	MOUNTING,CATCHER (#B)
51110	412 049 1700	SPECIAL SCREW-2.6X10 (#B)
6090A	613 151 9152	GEAR,RACK FRONT
OR	613 160 4636	GEAR,RACK FRONT
6090B	613 151 9114	GEAR,RACK START
6090C	613 152 0226	SPRING,RACK FRONT
60910	412 050 2802	SPECIAL SCREW-2.6X6
61000	613 151 9398	LEVER,EP SW
61100	613 152 3692	SPRING,EP SW
7010A	613 151 8803	ASSY,LEVER,PINCH ROLLER
7010B	613 171 0221	MOUNTING,LIFT PINCH
7010C	613 152 0233	SPRING,PINCH ROLLER
70200	613 156 3841	CAM,LIFT PINCH
70300	613 152 0677	GEAR,CAM PINCH
70400	613 152 0714	MOUNTING,OPENER
70410	412 049 1106	SPECIAL SCREW-2.6X16

(Fig. A) V95 I Mechanism

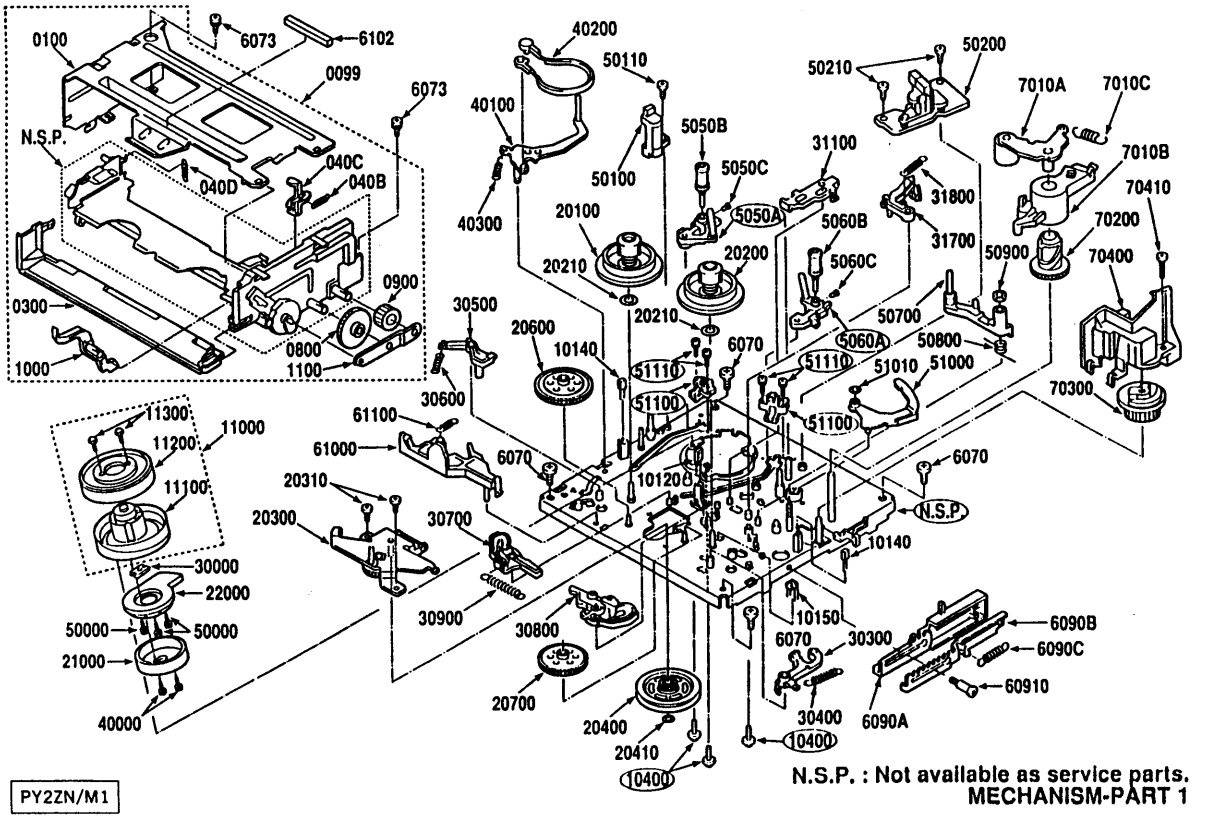
Note: Parts whose location number are enclosed in oval marks are for the V95 I mechanism.
They are not interchangeable with the V95 II mechanism parts shown in Fig B.



N.S.P. : Not available as service parts.
MECHANISM-PART 1

(Fig. B) V95 II Mechanism

Note: Parts whose location number are enclosed in oval marks are for the V95 II mechanism.
They are not interchangeable with the V95 I mechanism parts shown in Fig A.



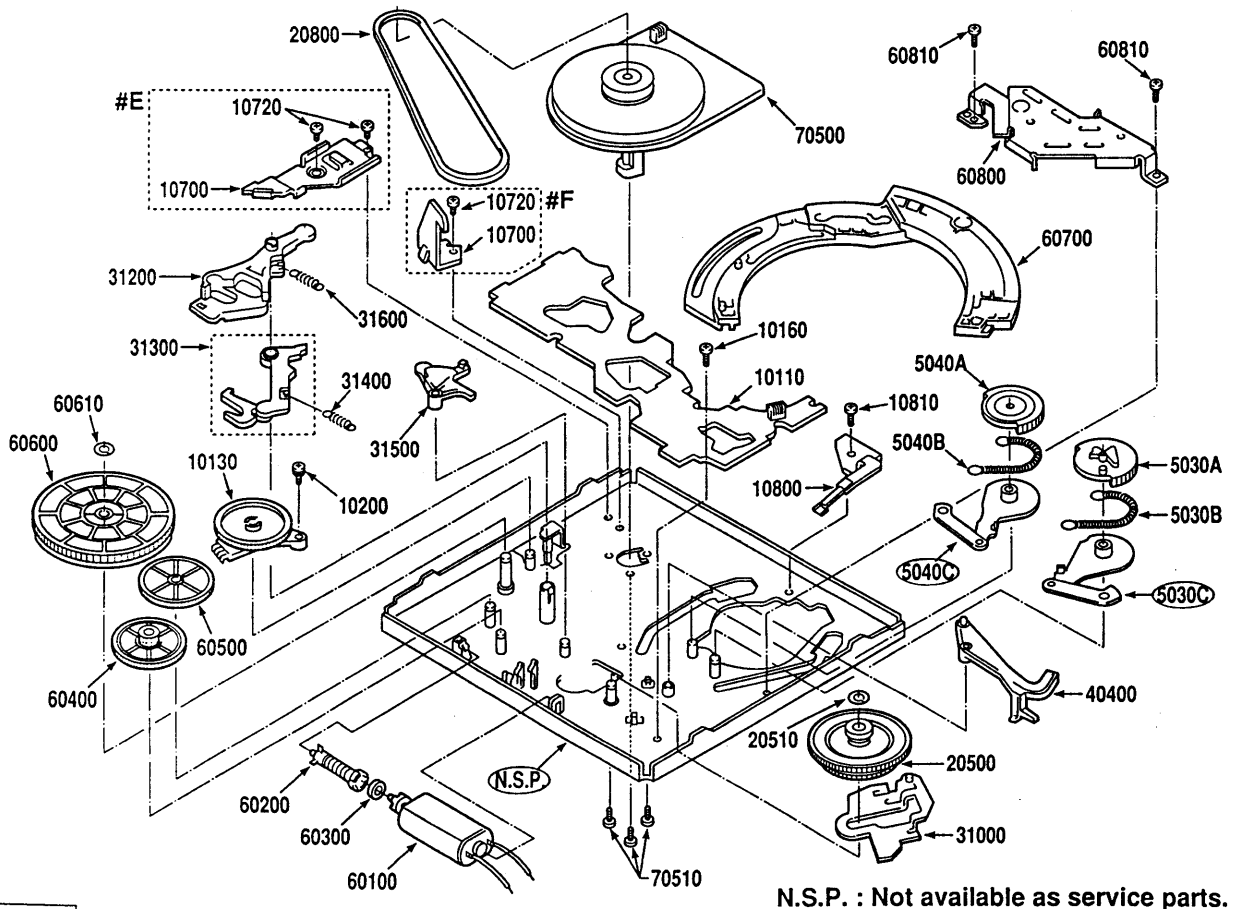
N.S.P. : Not available as service parts.
MECHANISM-PART 1

LOCATION	PARTS NO.	DESCRIPTION
MECHANISM PARTS 2		
10110	613 160 1574	COMPL PWB,MC-1
10130	645 007 1560	SWITCH,MODE
10160	412 048 7505	SPECIAL SCREW-2.6X4
10200	412 048 8304	SPECIAL SCREW-2.6X8
10700	613 153 0836	MOUNTING,HARNESS (#E)
OR	613 167 5926	MOUNTING CAPSTAN (#F)
10720	412 048 9608	SPECIAL SCREW-2.6X3 (#E)
OR	412 048 8007	SPECIAL SCREW-2.6X6 (#F)
10800	613 165 8523	ASSY,EARTH CYL
10810	412 048 8007	SPECIAL SCREW-2.6X6
20500	613 160 4186	ASSY,GEAR,FRICTION
20510	411 109 1605	WASHER Y 2.6X6X0.25
20800	613 151 9039	BELT,REEL
31000	613 152 0165	SLIDE,ACT BRAKE S
31200	613 159 0991	LEVER,CONTROL BRAKE
31300	613 159 0847	COMPL,LEVER,ACT BRAKE
31400	613 152 0332	SPRING,RETURN BRAKE
31500	613 151 9459	LEVER,CHANGE CLUTCH
31600	613 152 0349	SPRING,CHANGE CLUTCH
40400	613 153 7583	ASSY,LEVER SPRING BT
5030A	613 152 2763	GEAR,LOAD S
5030B	613 152 0370	SPRING,LOAD S
5030C	613 151 8766	ASSY,LEVER,LOAD S (#A)
OR	613 160 3691	ASSY,LEVER,LOAD S (#B)
5040A	613 152 2770	GEAR,LOAD T
5040B	613 152 0363	SPRING,LOAD T
5040C	613 151 8773	ASSY,LEVER,LOAD T (#A)
OR	613 160 3707	ASSY,LEVER,LOAD T (#B)
60100	645 003 4305	ASSY,MOTOR LOADING
60200	613 151 8599	COMPL,GEAR,WORM
60300	613 151 9107	DAMPER
60400	613 151 9138	GEAR,WHEEL 1
60500	613 160 3790	GEAR,WHEEL 2
60600	613 156 4008	CAM,MAIN
60610	412 051 6700	SPECIAL WASHER 3.6X0.5
60700	613 159 9017	SLIDE,CRESCENT
60800	613 159 8997	MOUNTING,CRESCENT
60810	412 048 8007	SPECIAL SCREW-2.6X6
70500	645 008 1897	MOTOR,CAPSTAN DC 3W
70510	412 048 7604	SPECIAL SCREW-2.6X6

(Fig. C)

Note: Parts whose location number are enclosed in oval marks are not interchangeable between the V95 I mechanism and V95 II mechanism.

Location Nos. 10700 and 10720 have two types of parts. (#E) and (#F) parts have different shapes, measurements, number of screws, and positions for attaching the screws.



N.S.P. : Not available as service parts.

MECHANISM-PART 2

PA4H/CA4-M2

ELECTRICAL PARTS

NOTE;

1. Materials of Capacitors and Resistors are abbreviated as follows;

Resistors

MT-FILM	Metallized Film Resistor
MT-GLAZE	Metallized Glaze Resistor
OXIDE-MT	Oxide Metallized Film Resistor

Capacitors

MT-POLYEST	Metallized Polyester Capacitor
MT-COMPO	Metallized Composite Capacitor
TA-SOLID	Tantalum Solid Capacitor
AL-SOLID	Aluminum Solid Capacitor
NP-ELECT	Non-Polarized Electrolytic Capacitor
OS-SOLID	Aluminum Solid Capacitors with Organic Semiconductive Electrolytic Capacitor
DL-ELECT	Double Layered Electrolytic Capacitor

2. Tolerance of Capacitor(10pF over) and Resistor are noted with follow symboles.
   F ····· ±1% G ····· ±2% J ····· ±5% K ····· ±10%
   M ····· ±20% N ····· ±30% Z ····· +80% ~ −20%
3. Capacitors
   U : uF P : pF
4. Inductors
   UH : uH MH : mH
5. N.S.P. : Not available as service parts.
6. The ceramic capacitors and resistors mounted on the PWB,may be two different types of parts,chip(leadless)type or discrete(with lead wire)type.Therefore,even though the location number is the same,you may encounter either chip or discrete parts on the PWB.

LOCATION	PARTS NO.	DESCRIPTION
COMPL PWB,CP-1-A		
COMPL.NO	613 171 9132	
(SEMICONDUCTORS)		
Q1001	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q1002	405 099 8508	TR 2SC4640S
OR	405 011 8401	TR 2SC1740S-Q
OR	405 093 0607	TR KSC2785-Y
OR	405 099 8607	TR 2SC4640T
OR	405 011 8500	TR 2SC1740S-R
Q1003	405 099 8508	TR 2SC4640S
OR	405 011 8401	TR 2SC1740S-Q
OR	405 093 0607	TR KSC2785-Y
OR	405 099 8607	TR 2SC4640T
OR	405 011 8500	TR 2SC1740S-R
Q1004	405 018 2501	TR 2SC3399
OR	405 000 6104	TR DTC144ES
Q1005	405 099 8508	TR 2SC4640S
OR	405 011 8401	TR 2SC1740S-Q
OR	405 093 0607	TR KSC2785-Y
OR	405 099 8607	TR 2SC4640T
OR	405 011 8500	TR 2SC1740S-R
Q1201	405 099 8300	TR 2SA1782T-AC
OR	405 006 1806	TR 2SA933S-R
Q1211	405 099 8508	TR 2SC4640S
OR	405 011 8401	TR 2SC1740S-Q
OR	405 093 0607	TR KSC2785-Y
OR	405 099 8607	TR 2SC4640T
OR	405 011 8500	TR 2SC1740S-R
Q1221	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q1222	405 064 0100	TR 2SA1561-Q
OR	405 064 0209	TR 2SA1561-R
OR	405 123 6708	TR 2SB1320A-Q
OR	405 123 6807	TR 2SB1320A-R
Q1401	405 099 8201	TR 2SA1782S
OR	405 006 1707	TR 2SA933S-Q
OR	405 093 0508	TR KSA1175-Y
OR	405 099 8300	TR 2SA1782T-AC
Q1401	405 006 1806	TR 2SA933S-R
Q2001	405 018 0002	TR 2SC3331-S
OR	405 018 0101	TR 2SC3331-T
OR	405 018 0200	TR 2SC3331-U
Q2002	405 063 9708	TR DTC144EL
Q2003	405 063 9302	TR DTA124EL
OR	405 124 2808	TR UN6112
Q3503	405 063 9708	TR DTC144EL
Q3504	405 063 9708	TR DTC144EL
Q3553	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q3581	405 063 9708	TR DTC144EL
Q5001	405 094 6905	TR 2SK1460
OR	405 126 0208	TR 2SK1460LS
Q5002	405 013 7006	TR 2SC2274-F
OR	405 013 7303	TR 2SC2274K-F
Q5003	405 006 6702	TR 2SA984-F
OR	405 006 7204	TR 2SA984K-F
Q5004	405 013 7006	TR 2SC2274-F
OR	405 013 7303	TR 2SC2274K-F
Q5101	405 089 2103	TR 2SC4483-S
OR	405 089 2202	TR 2SC4483-T
Q5102	405 089 2103	TR 2SC4483-S
OR	405 089 2202	TR 2SC4483-T
Q5103	405 013 6801	TR 2SC2274-E
OR	405 013 7006	TR 2SC2274-F
OR	405 013 7303	TR 2SC2274K-F
OR	405 013 7204	TR 2SC2274K-E
Q6921	405 084 8209	TR 2SC2960-F-SPA
OR	405 084 8308	TR 2SC2960-G-SPA
(INTEGRATED CIRCUITS)		
IC101	409 354 5707	IC LA7436AM-MPB
IC102	409 328 6907	IC LC89970M
IC111	409 120 3401	IC LA7221
IC141	410 255 5208	IC LC74783M-9083
OR	410 255 5307	IC LC74783M-9095

LOCATION	PARTS NO.	DESCRIPTION
IC201	409 262 2409	IC LA7285M
OR	409 340 3403	IC LA7283M
IC301	410 257 9006	IC LC866740A-5A74
IC302	409 314 2005	IC LB1643
IC303	409 313 0903	IC MN1381-L
OR	409 243 4101	IC MN1380-L
IC351	409 348 8103	IC XLU2899K
OR	409 348 6604	IC BU2899K
IC512	409 225 2309	IC PQ12RF11
IC602	410 177 3603	IC AT24C02-10PC
OR	409 348 6802	IC XL24C02P
OR	410 172 6807	IC X24C02PC7189
OR	410 189 5701	IC 24LC02B/P
IC692	409 026 8203	IC L5631
OR	409 057 5103	IC UPC574J
(DIODES)		
D1101	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1102	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1201	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1202	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1221	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D3001	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3102	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3115	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3116	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3122	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3502	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D5001	407 134 8900	DIODE DBC10G
D5003	407 078 2705	DIODE 1SS244
D5010	407 091 6704	DIODE AP01C
D5101	407 169 5707	DIODE RL2Z-LF-C4
OR	407 160 9308	DIODE ERB93-02L3
D5102	407 169 5707	DIODE RL2Z-LF-C4
OR	407 160 9308	DIODE ERB93-02L3
D5103	407 078 2705	DIODE 1SS244
D5104	407 078 2705	DIODE 1SS244
D5105	407 100 6909	DIODE AG01
OR	407 091 6902	DIODE ERA38-04
D5106	407 063 8903	ZENER DIODE MTZJ5.6C
D5107	407 063 8903	ZENER DIODE MTZJ5.6C
D5108	407 063 8903	ZENER DIODE MTZJ5.6C
D5109	407 099 6706	ZENER DIODE MTZJ13A
D5110	407 004 9709	DIODE DSK10C
OR	407 005 8701	DIODE ERA15-02
D5130	407 144 4107	ZENER DIODE MTZJ2.7A
(CRYSTAL DEVICES)		
X1001	645 000 6012	OSC,CRYSTAL 4.433619MHZ
OR	645 000 6029	OSC,CRYSTAL 4.433619MHZ
OR	645 002 4436	OSC,CRYSTAL 4.433619MHZ
X1001	645 014 8378	OSC,CRYSTAL 4.433619MHZ
X1401	613 002 8709	CRYSTAL 17.734475MHZ
OR	613 127 1555	OSC,CRYSTAL 17.734475MHZ
OR	645 014 8774	OSC,CRYSTAL 17.734475MHZ
X3001	645 008 8360	OSC,CERAMIC 8.500MHZ
OR	645 007 8460	OSC,CERAMIC 8.500MHZ
X3002	613 109 0972	OSC,CRYSTAL 32KHZ
OR	645 004 1938	OSC,CRYSTAL 32.768KHZ
(VARIABLE RESISTORS)		
VR201	645 003 5548	VR,SEMI,100K N
OR	645 001 8787	VR,SEMI,100K N
OR	645 006 5439	VR,SEMI,100K N
VR351	645 006 5538	VR,SEMI,220K N
OR	645 003 5593	VR,SEMI,220K N
OR	645 003 5166	VR,SEMI,220K N
(INDUCTORS)		
L1001	645 001 4574	INDUCTOR 100U J
OR	645 003 7917	INDUCTOR,100U J
L1002	645 002 1435	INDUCTOR 150U J
OR	645 011 1556	INDUCTOR,150U J
L1003	645 002 1428	INDUCTOR 15U J
OR	645 003 7955	INDUCTOR,15U J
L1005	645 001 5472	INDUCTOR 33U J
OR	645 003 8105	INDUCTOR,33U J
L1201	645 008 7400	CORE,BEAD
L2002	645 009 0417	INDUCTOR,10.0M J
L3001	645 009 3791	CORE,BEAD
L3004	645 009 3791	CORE,BEAD
L5001 ⚠	645 013 5620	LINE FILTER
L5010	645 006 3602	INDUCTOR,1.1UH
L5101	645 006 3602	INDUCTOR,1.1UH
L5102	645 006 3602	INDUCTOR,1.1UH
L5103	645 009 3791	CORE,BEAD
L6008	645 001 4550	INDUCTOR 10U K
OR	645 003 7900	INDUCTOR,10U K
L6009	645 003 6910	INDUCTOR,10U J
L6602	645 001 4550	INDUCTOR 10U K
OR	645 003 7900	INDUCTOR,10U K
L6604	645 006 3886	INDUCTOR,1U K
OR	645 005 3856	INDUCTOR,1U M
(TRANSFORMERS)		
T2001	613 098 6023	TRANS,OSC 70KHZ
OR	621 019 9596	70KHZ OSC TRANS
OR	645 004 7480	TRANS,OSC,70KHZ
T5001 ⚠	645 009 0011	TRANS,POWER,PULSE
(CAPACITORS)		
C1001	403 121 9509	CERAMIC 0.1U Z 50V
C1002	403 120 9609	CERAMIC 0.047U J 16V
C1003	403 001 1906	CERAMIC 0.01U M 16V
C1004	403 121 9509	CERAMIC 0.1U Z 50V
C1005	403 001 1906	CERAMIC 0.01U M 16V
C1006	403 001 1906	CERAMIC 0.01U M 16V
C1007	403 073 2702	CERAMIC 390P J 50V
C1008	403 120 9005	CERAMIC 0.022U J 16V
C1010	403 120 9609	CERAMIC 0.047U J 16V
C1011	403 001 1906	CERAMIC 0.01U M 16V
C1012	403 071 1509	CERAMIC 180P J 50V
C1013	403 217 5507	CERAMIC 0.1U J 16V

LOCATION	PARTS NO.	DESCRIPTION		
C1014	403 001 1906	CERAMIC	0.01U M	16V
C1015	403 001 1906	CERAMIC	0.01U M	16V
C1016	403 001 1906	CERAMIC	0.01U M	16V
C1017	403 001 1906	CERAMIC	0.01U M	16V
C1018	403 001 1906	CERAMIC	0.01U M	16V
C1019	403 001 1906	CERAMIC	0.01U M	16V
C1020	403 001 1906	CERAMIC	0.01U M	16V
C1021	403 001 1906	CERAMIC	0.01U M	16V
C1023	403 189 2405	ELECT	10U M	16V
C1024	403 163 7907	ELECT	47U M	6.3V
C1025	403 109 6308	ELECT	1U M	50V
C1026	403 107 9905	ELECT	10U M	16V
C1027	403 191 8709	ELECT	1U M	50V
C1028	403 163 7907	ELECT	47U M	6.3V
C1029	403 163 7907	ELECT	47U M	6.3V
C1030	403 191 8709	ELECT	1U M	50V
C1031	403 191 8709	ELECT	1U M	50V
C1032	403 191 8709	ELECT	1U M	50V
C1034	403 009 1809	CERAMIC	10P J	50V
C1036	403 217 5507	CERAMIC	0.1U J	16V
C1037	403 074 8703	CERAMIC	680P J	50V
C1038	403 017 9705	CERAMIC	22P J	50V
C1039	403 075 3103	CERAMIC	82P J	50V
C1040	403 019 9703	CERAMIC	27P J	50V
C1042	403 222 1105	CERAMIC	0.047U Z	16V
C1043	403 001 1906	CERAMIC	0.01U M	16V
C1045	403 072 7500	CERAMIC	330P J	50V
C1052	403 222 1105	CERAMIC	0.047U Z	16V
C1054	403 109 6308	ELECT	1U M	50V
C1055	403 135 4002	ELECT	47U M	6.3V
C1056	403 109 6308	ELECT	1U M	50V
C1057	403 150 6500	ELECT	22U M	16V
C1058	403 189 2405	ELECT	10U M	16V
C1059	403 191 8709	ELECT	1U M	50V
C1060	403 017 9705	CERAMIC	22P J	50V
C1061	403 001 1906	CERAMIC	0.01U M	16V
C1065	403 075 3103	CERAMIC	82P J	50V
C1101	403 130 2904	ELECT	0.47U M	50V
C1102	403 107 9905	ELECT	10U M	16V
C1103	403 222 1105	CERAMIC	0.047U Z	16V
C1201	403 135 4101	ELECT	470U M	6.3V
C1202	403 121 9509	CERAMIC	0.1U Z	50V
C1211	403 022 7703	CERAMIC	33P J	50V
C1401	403 012 4002	CERAMIC	15P J	50V
C1402	403 012 4002	CERAMIC	15P J	50V
C1403	403 191 8709	ELECT	1U M	50V
C1404	403 001 1906	CERAMIC	0.01U M	16V
C1405	403 135 4002	ELECT	47U M	6.3V
C2002	403 069 0309	CERAMIC	1000P J	50V
C2004	403 163 7907	ELECT	47U M	6.3V
C2005	403 150 0201	CERAMIC	0.018U K	16V
C2009	403 121 2401	ELECT	22U M	16V
C2010	403 150 6500	ELECT	22U M	16V
C2013	403 002 8201	CERAMIC	0.015U J	25V
C2016	403 167 7002	ELECT	4.7U M	50V
C2017	403 107 9905	ELECT	10U M	16V
C2019	403 134 9602	ELECT	47U M	16V
C2020	403 071 6207	CERAMIC	220P K	50V
C2021	403 082 4209	POLYPRO	6800P J	100V
C2022	403 001 1906	CERAMIC	0.01U M	16V
C2024	403 001 1906	CERAMIC	0.01U M	16V
C2031	403 121 9509	CERAMIC	0.1U Z	50V
C2032	403 121 9509	CERAMIC	0.1U Z	50V
C2051	403 070 4105	CERAMIC	120P K	50V
C2071	403 069 0309	CERAMIC	1000P J	50V
C2072	403 191 8808	ELECT	2.2U M	50V
C2073	403 003 2406	CERAMIC	0.022U J	25V
C2091	403 121 9509	CERAMIC	0.1U Z	50V

LOCATION	PARTS NO.	DESCRIPTION		
C2092	403 001 5102	CERAMIC	2200P M	16V
C2107	403 069 0309	CERAMIC	1000P J	50V
C2109	403 001 8905	CERAMIC	6800P M	16V
C3001	403 016 8907	CERAMIC	20P J	50V
C3002	403 016 8907	CERAMIC	20P J	50V
C3004	403 001 1906	CERAMIC	0.01U M	16V
C3005	403 001 1906	CERAMIC	0.01U M	16V
C3008	403 150 6500	ELECT	22U M	16V
C3009	403 001 1906	CERAMIC	0.01U M	16V
C3011	403 121 9509	CERAMIC	0.1U Z	50V
C3012	403 001 1906	CERAMIC	0.01U M	16V
C3014	403 135 4101	ELECT	470U M	6.3V
C3016	403 001 1906	CERAMIC	0.01U M	16V
C3017	403 069 1207	CERAMIC	1000P K	50V
C3020	403 001 1906	CERAMIC	0.01U M	16V
C3021	403 026 2209	CERAMIC	47P J	50V
C3022	403 305 4801	DL-ELECT	0.1F Z	5.5V
C3034	403 001 1906	CERAMIC	0.01U M	16V
C3501	403 129 9709	CERAMIC	0.015U K	16V
C3502	403 001 8806	CERAMIC	6800P K	16V
C3503	403 129 9709	CERAMIC	0.015U K	16V
C3504	403 228 8207	ELECT	22U M	16V
C3505	403 228 8207	ELECT	22U M	16V
C3506	403 001 8806	CERAMIC	6800P K	16V
C3507	403 150 6500	ELECT	22U M	16V
C3508	403 150 6500	ELECT	22U M	16V
C3509	403 163 7907	ELECT	47U M	6.3V
C3511	403 071 6207	CERAMIC	220P K	50V
C3512	403 061 3407	POLYESTER	0.039U J	50V
C3513	403 119 6701	CERAMIC	0.068U K	16V
C3514	403 175 1009	MT-POLYEST	0.15U J	50V
C3515	403 059 6205	POLYESTER	0.022U K	50V
C3516	403 001 5003	CERAMIC	2200P K	16V
C3517	403 001 3801	CERAMIC	1500P K	16V
C3522	403 069 1207	CERAMIC	1000P K	50V
C3523	403 191 8709	ELECT	1U M	50V
C3524	403 001 1906	CERAMIC	0.01U M	16V
C3525	403 130 2904	ELECT	0.47U M	50V
C3526	403 063 7205	POLYESTER	0.082U J	50V
C3530	403 135 4002	ELECT	47U M	6.3V
C3536	403 193 7601	ELECT	220U M	6.3V
C3540	403 068 9402	CERAMIC	100P K	50V
C3551	403 168 6202	MT-POLYEST	0.33U J	50V
C3552	403 028 3402	CERAMIC	56P J	50V
C3553	403 191 8709	ELECT	1U M	50V
C3554	403 070 7205	CERAMIC	150P J	50V
C3556	403 069 1207	CERAMIC	1000P K	50V
C3558	403 149 0700	ELECT	33U M	16V
C3570	403 121 9509	CERAMIC	0.1U Z	50V
C3571	403 121 9509	CERAMIC	0.1U Z	50V
C3581	403 184 9805	MT-POLYEST	0.22U J	50V
C5001 ⚠	404 070 4201	MT-POLYEST	0.068U M	250V
C5002 ⚠	404 070 4201	MT-POLYEST	0.068U M	250V
C5005 ⚠	404 067 4900	CERAMIC	1000P M	400V
C5007 ⚠	404 067 4900	CERAMIC	1000P M	400V
C5010	403 249 0204	ELECT	47U M	400V
C5011	403 057 3107	POLYESTER	0.1U K	50V
C5012	403 073 6205	CERAMIC	470P J	50V
C5015	403 076 0507	CERAMIC	2200P K	500V
C5022	403 076 2402	CERAMIC	3300P K	500V
C5025	403 255 8409	CERAMIC	39P J	1K
C5101	403 243 8206	ELECT	2200U M	6.3V
C5102	403 147 9200	ELECT	1000U M	6.3V
C5103	403 207 5005	ELECT	470U M	16V
C5104	403 218 3106	ELECT	1000U M	16V
C5105	403 228 8900	ELECT	100U M	50V

LOCATION	PARTS NO.	DESCRIPTION		
C5106	403 228 9600	ELECT	47U M	35V
C5107	403 243 7803	ELECT	220U M	6.3V
C5111	403 134 6007	ELECT	330U M	16V
C5112	403 107 9905	ELECT	10U M	16V
C5113	403 135 7805	ELECT	3.3U M	50V
C5114	403 107 9905	ELECT	10U M	16V
C5115	403 135 7805	ELECT	3.3U M	50V
C5116	403 189 2405	ELECT	10U M	16V
C6004	403 168 6103	MT-POLYEST	0.1U J	50V
C6005	403 121 9509	CERAMIC	0.1U Z	50V
C6007	403 107 9905	ELECT	10U M	16V
C6008	403 228 6401	CERAMIC	0.033U Z	16V
C6009	403 134 9602	ELECT	47U M	16V
C6010	403 071 7501	CERAMIC	2200P K	50V
C6018	403 121 9509	CERAMIC	0.1U Z	50V
C6601	403 107 9905	ELECT	10U M	16V
C6602	403 107 9905	ELECT	10U M	16V
C6917	403 014 2501	CERAMIC	18P J	50V
C6922	403 193 8905	ELECT	22U M	50V
C6924	403 071 2001	CERAMIC	180P K	50V
C6925	403 168 6202	MT-POLYEST	0.33U J	50V
C6926	403 184 9805	MT-POLYEST	0.22U J	50V
(RESISTORS)				
R1001	401 023 2703	CARBON	8.2K JA	1/4W
R1002	401 014 5102	CARBON	15K JA	1/4W
R1003	401 012 6903	CARBON	10K JA	1/4W
R1004	401 022 1806	CARBON	680 JA	1/4W
R1005	401 017 1705	CARBON	2.7K JA	1/4W
R1006	401 015 2605	CARBON	1.8K JA	1/4W
R1007	401 012 5609	CARBON	1K JA	1/4W
R1008	401 012 5609	CARBON	1K JA	1/4W
R1009	401 016 3700	CARBON	2.2K JA	1/4W
R1010	401 014 4006	CARBON	1.5K JA	1/4W
R1011	401 020 1907	CARBON	4.7K JA	1/4W
R1012	401 012 5609	CARBON	1K JA	1/4W
R1013	401 012 5609	CARBON	1K JA	1/4W
R1014	401 015 2605	CARBON	1.8K JA	1/4W
R1015	401 023 3601	CARBON	82K JA	1/4W
R1016	401 012 5609	CARBON	1K JA	1/4W
R1017	401 012 5609	CARBON	1K JA	1/4W
R1018	401 014 4006	CARBON	1.5K JA	1/4W
R1020	401 018 3708	CARBON	3.3K JA	1/4W
R1021	401 022 3008	CARBON	6.8K JA	1/4W
R1022	401 012 6903	CARBON	10K JA	1/4W
R1024	401 012 5609	CARBON	1K JA	1/4W
R1029	401 016 2505	CARBON	220 JA	1/4W
R1030	401 023 1607	CARBON	820 JA	1/4W
R1032	401 018 2701	CARBON	330 JA	1/4W
R1035	401 012 6903	CARBON	10K JA	1/4W
R1037	401 012 4404	CARBON	100 JA	1/4W
R1038	401 012 5609	CARBON	1K JA	1/4W
R1101	401 018 2701	CARBON	330 JA	1/4W
R1102	401 019 0904	CARBON	390 JA	1/4W
R1103	401 012 5609	CARBON	1K JA	1/4W
R1104	401 012 5609	CARBON	1K JA	1/4W
R1202	401 022 6702	CARBON	75 JA	1/4W
R1203	401 022 6702	CARBON	75 JA	1/4W
R1204	401 021 1807	CARBON	560 JA	1/4W
R1206	401 016 2505	CARBON	220 JA	1/4W
R1211	401 013 5202	CARBON	1.2K JA	1/4W
R1213	401 013 5202	CARBON	1.2K JA	1/4W
R1215	401 012 5609	CARBON	1K JA	1/4W
R1218	401 022 0700	CARBON	68 JA	1/4W
R1221	401 012 6903	CARBON	10K JA	1/4W
R1222	401 012 6903	CARBON	10K JA	1/4W
R1223	401 021 2903	CARBON	5.6K JA	1/4W
R1224	401 021 2903	CARBON	5.6K JA	1/4W
R1225	401 021 0602	CARBON	56 JA	1/4W
R1226	401 012 4404	CARBON	100 JA	1/4W
R1229	401 020 1907	CARBON	4.7K JA	1/4W
R1401	401 012 5609	CARBON	1K JA	1/4W
R2001	401 012 4404	CARBON	100 JA	1/4W
R2002	401 017 1705	CARBON	2.7K JA	1/4W
R2003	401 022 0700	CARBON	68 JA	1/4W
R2004	401 019 3905	CARBON	390K JA	1/4W
R2005	401 021 8905	CARBON	6.2K JA	1/4W
R2009	401 012 9201	CARBON	1M JA	1/4W
R2010	401 015 3701	CARBON	18K JA	1/4W
R2011	401 012 6903	CARBON	10K JA	1/4W
R2012	401 015 3701	CARBON	18K JA	1/4W
R2013	401 022 3008	CARBON	6.8K JA	1/4W
R2014	401 013 5202	CARBON	1.2K JA	1/4W
R2018	401 016 4707	CARBON	22K JA	1/4W
R2021	401 018 1506	CARBON	33 JA	1/4W
R2022	401 019 9501	CARBON	47 JA	1/4W
R2023	401 014 5102	CARBON	15K JA	1/4W
R2024	401 019 6104	CARBON	4.7 JA	1/4W
R2025	401 020 2805	CARBON	47K JA	1/4W
R2026	401 018 4804	CARBON	33K JA	1/4W
R2031	401 019 2908	CARBON	39K JA	1/4W
R2032	401 013 6308	CARBON	12K JA	1/4W
R2033	401 019 2908	CARBON	39K JA	1/4W
R2034	401 012 6903	CARBON	10K JA	1/4W
R2071	401 023 0600	CARBON	82 JA	1/4W
R2085	401 013 6308	CARBON	12K JA	1/4W
R2091	401 017 1705	CARBON	2.7K JA	1/4W
R2107	401 017 1705	CARBON	2.7K JA	1/4W
R2108	401 017 1705	CARBON	2.7K JA	1/4W
R2109	401 021 1807	CARBON	560 JA	1/4W
R2123	401 020 0702	CARBON	470 JA	1/4W
R3001 ⚠	402 067 7402	FUSIBLE RES	3.3 JA	1/2W
R3004	401 014 4006	CARBON	1.5K JA	1/4W
R3008	401 020 1907	CARBON	4.7K JA	1/4W
R3009	401 012 6903	CARBON	10K JA	1/4W
R3011	401 020 2805	CARBON	47K JA	1/4W
R3013	401 020 1907	CARBON	4.7K JA	1/4W
R3014	401 014 9001	CARBON	16K JA	1/4W
R3015	401 014 9001	CARBON	16K JA	1/4W
R3018	401 022 3008	CARBON	6.8K JA	1/4W
R3019	401 015 3701	CARBON	18K JA	1/4W
R3022	401 012 8006	CARBON	100K JA	1/4W
R3023	401 012 5609	CARBON	1K JA	1/4W
R3024	401 012 5609	CARBON	1K JA	1/4W
R3025	401 012 5609	CARBON	1K JA	1/4W
R3026	401 012 5609	CARBON	1K JA	1/4W
R3032	401 018 4804	CARBON	33K JA	1/4W
R3034	401 013 6308	CARBON	12K JA	1/4W
R3035	401 012 6903	CARBON	10K JA	1/4W
R3036	401 016 3700	CARBON	2.2K JA	1/4W
R3047	401 015 2605	CARBON	1.8K JA	1/4W
R3048	401 013 5202	CARBON	1.2K JA	1/4W
R3049	401 017 1705	CARBON	2.7K JA	1/4W
R3050	401 016 4707	CARBON	22K JA	1/4W
R3051	401 016 4707	CARBON	22K JA	1/4W
R3101	401 012 6903	CARBON	10K JA	1/4W
R3102	401 012 6903	CARBON	10K JA	1/4W
R3103	401 012 6903	CARBON	10K JA	1/4W
R3104	401 012 6903	CARBON	10K JA	1/4W
R3501	401 012 8006	CARBON	100K JA	1/4W
R3502	401 012 8006	CARBON	100K JA	1/4W
R3503	401 018 5702	CARBON	330K JA	1/4W
R3504	401 014 6000	CARBON	150K JA	1/4W
R3505	401 014 5102	CARBON	15K JA	1/4W

LOCATION	PARTS NO.	DESCRIPTION		
R3506	401 016 5704	CARBON	220K JA	1/4W
R3507	401 014 6000	CARBON	150K JA	1/4W
R3508	401 020 2805	CARBON	47K JA	1/4W
R3516	401 012 6903	CARBON	10K JA	1/4W
R3517	401 020 2805	CARBON	47K JA	1/4W
R3518	401 020 2805	CARBON	47K JA	1/4W
R3520	401 019 3905	CARBON	390K JA	1/4W
R3521	401 012 6903	CARBON	10K JA	1/4W
R3525	401 012 5609	CARBON	1K JA	1/4W
R3526	401 016 3700	CARBON	2.2K JA	1/4W
R3527	401 012 5609	CARBON	1K JA	1/4W
R3528	401 020 7800	CARBON	510 JA	1/4W
R3529	401 020 7800	CARBON	510 JA	1/4W
R3533	401 014 4006	CARBON	1.5K JA	1/4W
R3537	401 023 2703	CARBON	8.2K JA	1/4W
R3546	401 020 1907	CARBON	4.7K JA	1/4W
R3547	401 014 5102	CARBON	15K JA	1/4W
R3549	401 012 6903	CARBON	10K JA	1/4W
R3550	401 023 2703	CARBON	8.2K JA	1/4W
R3556	401 012 6903	CARBON	10K JA	1/4W
R3557	401 018 5702	CARBON	330K JA	1/4W
R3558	401 020 0702	CARBON	470 JA	1/4W
R3560	401 012 5609	CARBON	1K JA	1/4W
R3581	401 021 4006	CARBON	56K JA	1/4W
R3590	401 012 5609	CARBON	1K JA	1/4W
R3591	401 012 5609	CARBON	1K JA	1/4W
R5001	402 013 9108	SOLID	2.7M KB	1/2W
R5010	401 017 3709	CARBON	270K JA	1/4W
R5011	401 017 3709	CARBON	270K JA	1/4W
R5012	401 015 4609	CARBON	180K JA	1/4W
R5013	401 017 0708	CARBON	27Ω JA	1/4W
R5014	401 012 6903	CARBON	10K JA	1/4W
R5020	401 071 2403	OXIDE-MT	15K JA	3W
R5101	401 021 7007	CARBON	6.8 JA	1/4W
R5102	401 017 1705	CARBON	2.7K JA	1/4W
R5103	401 023 6206	CARBON	9.1 JA	1/4W
R5104	401 020 2805	CARBON	47K JA	1/4W
R5105	401 017 0708	CARBON	270 JA	1/4W
R5106	401 021 1807	CARBON	560 JA	1/4W
R5108	401 020 1907	CARBON	4.7K JA	1/4W
R5109	401 020 1907	CARBON	4.7K JA	1/4W
R5110 ⚠	402 071 3100	FUSIBLE RES	27 JA	1/4W
R6001	401 019 3905	CARBON	390K JA	1/4W
R6002	401 017 3709	CARBON	270K JA	1/4W
R6003	401 012 8006	CARBON	100K JA	1/4W
R6004	401 013 7206	CARBON	120K JA	1/4W
R6006	401 018 3708	CARBON	3.3K JA	1/4W
R6009	401 020 1907	CARBON	4.7K JA	1/4W
R6071 ⚠	402 042 0701	FUSIBLE RES	680 GA	1/4W
R6691	401 012 5609	CARBON	1K JA	1/4W
R6692	401 016 3700	CARBON	2.2K JA	1/4W
R6917	401 017 2702	CARBON	27K JA	1/4W
R6921	401 018 4804	CARBON	33K JA	1/4W
R6922	401 012 6903	CARBON	10K JA	1/4W
R6923	401 012 6903	CARBON	10K JA	1/4W
R6924	401 015 3701	CARBON	18K JA	1/4W
R6925	401 014 5102	CARBON	15K JA	1/4W
R6926	401 013 6308	CARBON	12K JA	1/4W
R6927	401 013 4106	CARBON	120 JA	1/4W
(FUSE)				
F5001 ⚠	423 021 8402	FUSE	250V 2.5A	
(PROTECTORS)				
PR511 ⚠	645 005 9834	PROTECTOR,IC 1.0A 50V		
PR512 ⚠	645 014 2512	PROTECTOR,1A 125V		

LOCATION	PARTS NO.	DESCRIPTION		
(CONNECTORS)				
CN121	613 111 5712	SOCKET,21P		
OR	645 002 4528	SOCKET,RGB 21P		
OR	645 003 1656	SOCKET,RGB 21P		
CN501 ⚠	645 000 5411	SOCKET,INLET AC		
(MISCELLANEOUS)				
	613 053 8048	FIXER		
	645 008 7677	HOLDER,FUSE,F5001		
OR	645 008 7660	HOLDER,FUSE,F5001		
OR	645 016 0479	HOLDER,FUSE,F5001		

****

COMPL PWB,VP-1

COMPL.NO 613 171 8746

(SEMICONDUCTORS)				
Q1902	405 015 9701	TR 2SC2814-F4		
OR	405 015 9909	TR 2SC2814-F5		
OR	405 035 6100	TR 2SC2413K-Q		
Q1903	405 015 9701	TR 2SC2814-F4		
OR	405 015 9909	TR 2SC2814-F5		
OR	405 035 6100	TR 2SC2413K-Q		
Q1904	405 015 8407	TR 2SC2812-L5		
OR	405 015 8704	TR 2SC2812-L6		
OR	405 014 4509	TR 2SC2412K-R		
OR	405 014 4608	TR 2SC2412K-S		
(INTEGRATED CIRCUIT)				
IC181	409 348 1005	IC LA7411		
(INDUCTORS)				
L1851	645 001 5489	INDUCTOR 33U K		
OR	645 003 8112	INDUCTOR,33U K		
L1852	645 001 4666	INDUCTOR 220U K		
OR	645 003 8044	INDUCTOR,220U K		
L1853	645 001 4666	INDUCTOR 220U K		
OR	645 003 8044	INDUCTOR,220U K		
L1901	645 001 4550	INDUCTOR 10U K		
OR	645 003 7900	INDUCTOR,10U K		
L1903	645 001 5519	INDUCTOR 47U K		
OR	645 010 2172	INDUCTOR,47U K		
L1904	645 003 8426	INDUCTOR,27U K		
OR	645 003 8068	INDUCTOR,27U K		
L1905	645 001 4635	INDUCTOR 15U K		
OR	645 003 7962	INDUCTOR,15U K		
(CAPACITORS)				
C1808	403 068 0409	CERAMIC	0.1U Z	25V
C1812	403 068 0409	CERAMIC	0.1U Z	25V
C1813	403 069 5601	CERAMIC	0.01U K	50V
C1814	403 068 0409	CERAMIC	0.1U Z	25V
C1815	403 284 9408	OS-SOLID	3.3U M	16V
C1817	403 068 0409	CERAMIC	0.1U Z	25V
C1819	403 069 5601	CERAMIC	0.01U K	50V
C1820	403 069 5601	CERAMIC	0.01U K	50V
C1822	403 069 5601	CERAMIC	0.01U K	50V
C1823	403 069 5601	CERAMIC	0.01U K	50V
C1851	403 010 8606	CERAMIC	12P J	50V
C1853	403 009 5807	CERAMIC	100P J	50V
C1854	403 014 9302	CERAMIC	180P J	50V
C1857	403 018 0602	CERAMIC	22P J	50V
C1861	403 068 0409	CERAMIC	0.1U Z	25V
C1901	403 069 5601	CERAMIC	0.01U K	50V
C1902	403 022 8304	CERAMIC	33P J	50V

LOCATION	PARTS NO.	DESCRIPTION
C1905	403 022 8304	CERAMIC 33P J 50V
C1906	403 026 2902	CERAMIC 47P J 50V
C1907	403 026 2902	CERAMIC 47P J 50V
C1911	403 068 0409	CERAMIC 0.1U Z 25V
(RESISTORS)		
R1805	401 038 9308	MT-GLAZE 68K JA 1/10W
R1806	401 037 5707	MT-GLAZE 100K JA 1/10W
R1808	401 037 8005	MT-GLAZE 15K JA 1/10W
R1814	401 037 9200	MT-GLAZE 1.8K JA 1/10W
R1817	401 038 0800	MT-GLAZE 22K JA 1/10W
R1851	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R1852	401 037 7909	MT-GLAZE 1.5K JA 1/10W
R1854	401 037 5400	MT-GLAZE 1K JA 1/10W
R1902	401 038 7601	MT-GLAZE 560 JA 1/10W
R1903	401 038 0800	MT-GLAZE 22K JA 1/10W
R1904	401 038 0800	MT-GLAZE 22K JA 1/10W
R1905	401 038 5003	MT-GLAZE 390 JA 1/10W
R1906	401 038 5003	MT-GLAZE 390 JA 1/10W
R1907	401 037 5400	MT-GLAZE 1K JA 1/10W
R1908	401 039 0304	MT-GLAZE 820 JA 1/10W
R1909	401 038 3504	MT-GLAZE 330 JA 1/10W
R1910	401 038 6307	MT-GLAZE 470 JA 1/10W
R1911	401 037 5400	MT-GLAZE 1K JA 1/10W
R1912	401 038 2002	MT-GLAZE 270 JA 1/10W
(JUMPERS)		
J1811	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J1861	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J1862	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J1864	401 037 5004	MT-GLAZE 0.000 ZA 1/10W

****

COMPL PWB,TM-1

COMPL.NO 613 160 8030

(DIODES)		
D7101	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D7102	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D7103	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D7104	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
(CAPACITOR)		
C7101	403 043 8802	ELECT 4.7U M 16V
(SWITCHES)		
S7101	645 001 9777	SWITCH,PUSH 1P-1T,POWER
OR	645 006 2797	SWITCH,PUSH 1P-1T,POWER
OR	645 008 8049	SWITCH,PUSH 1P-1T,POWER
OR	645 011 5165	SWITCH,PUSH 1P-1T,POWER
OR	645 011 5172	SWITCH,PUSH 1P-1T,POWER
S7102	645 001 9777	SWITCH,PUSH 1P-1T,STOP/EJECT
OR	645 006 2797	SWITCH,PUSH 1P-1T,STOP/EJECT
OR	645 008 8049	SWITCH,PUSH 1P-1T,STOP/EJECT
OR	645 011 5165	SWITCH,PUSH 1P-1T,STOP/EJECT
OR	645 011 5172	SWITCH,PUSH 1P-1T,STOP/EJECT
S7103	645 001 9777	SWITCH,PUSH 1P-1T,CH-UP
OR	645 006 2797	SWITCH,PUSH 1P-1T,CH-UP
OR	645 008 8049	SWITCH,PUSH 1P-1T,CH-UP
OR	645 011 5165	SWITCH,PUSH 1P-1T,CH-UP
OR	645 011 5172	SWITCH,PUSH 1P-1T,CH-UP
S7104	645 001 9777	SWITCH,PUSH 1P-1T,CH-DOWN
OR	645 006 2797	SWITCH,PUSH 1P-1T,CH-DOWN
S7104	645 008 8049	SWITCH,PUSH 1P-1T,CH-DOWN
OR	645 011 5165	SWITCH,PUSH 1P-1T,CH-DOWN
OR	645 011 5172	SWITCH,PUSH 1P-1T,CH-DOWN
S7106	645 001 9777	SWITCH,PUSH 1P-1T,PAUSE
OR	645 006 2797	SWITCH,PUSH 1P-1T,PAUSE
OR	645 008 8049	SWITCH,PUSH 1P-1T,PAUSE
OR	645 011 5165	SWITCH,PUSH 1P-1T,PAUSE
OR	645 011 5172	SWITCH,PUSH 1P-1T,PAUSE
S7107	645 001 9777	SWITCH,PUSH 1P-1T,REW
OR	645 006 2797	SWITCH,PUSH 1P-1T,REW
OR	645 008 8049	SWITCH,PUSH 1P-1T,REW
OR	645 011 5165	SWITCH,PUSH 1P-1T,REW
OR	645 011 5172	SWITCH,PUSH 1P-1T,REW
S7108	645 001 9777	SWITCH,PUSH 1P-1T,PLAY
OR	645 006 2797	SWITCH,PUSH 1P-1T,PLAY
OR	645 008 8049	SWITCH,PUSH 1P-1T,PLAY
OR	645 011 5165	SWITCH,PUSH 1P-1T,PLAY
OR	645 011 5172	SWITCH,PUSH 1P-1T,PLAY
S7109	645 001 9777	SWITCH,PUSH 1P-1T,FF
OR	645 006 2797	SWITCH,PUSH 1P-1T,FF
OR	645 008 8049	SWITCH,PUSH 1P-1T,FF
OR	645 011 5165	SWITCH,PUSH 1P-1T,FF
OR	645 011 5172	SWITCH,PUSH 1P-1T,FF
S7110	645 001 9777	SWITCH,PUSH 1P-1T,REC
OR	645 006 2797	SWITCH,PUSH 1P-1T,REC
OR	645 008 8049	SWITCH,PUSH 1P-1T,REC
OR	645 011 5165	SWITCH,PUSH 1P-1T,REC
OR	645 011 5172	SWITCH,PUSH 1P-1T,REC
(REMOTE RECEIVERS)		
RR711	645 006 8720	UNIT,IR RECEIVER PACK
OR	613 129 0938	IR RECEIVER PACK UNIT
OR	645 008 7875	UNIT,IR RECEIVER PACK
(DISPLAYS)		
A7101	645 004 0597	FLUORESCENT TUBE
OR	645 004 0603	FLUORESCENT TUBE
(MISCELLANEOUS)		
	613 139 2267	HOLDER FL
	613 163 1700	HOLDER IR

****

COMPL PCB,TM-9

COMPL.NO 613 158 5751

(INTEGRATED CIRCUIT)		
IC771	409 340 9600	IC SDA5649
(CAPACITORS)		
C7701	403 060 7505	POLYESTER 0.033U J 50V
C7702	403 071 8102	CERAMIC 2200P K 50V
C7703	403 256 4608	MT-COMPO 0.33U J 50V
C7704	403 013 3004	CERAMIC 150P J 50V
C7705	403 068 0409	CERAMIC 0.1U Z 25V
(RESISTORS)		
R7701	401 038 9209	MT-GLAZE 6.8K JA 1/10W
R7702	401 037 7008	MT-GLAZE 1.2M JA 1/10W
R7703	401 038 9209	MT-GLAZE 6.8K JA 1/10W
R7704	401 037 7008	MT-GLAZE 1.2M JA 1/10W
R7705	401 037 5806	MT-GLAZE 1M JA 1/10W
R7706	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R7707	401 037 5707	MT-GLAZE 100K JA 1/10W
R7708	401 037 5608	MT-GLAZE 10K JA 1/10W

****

LOCATION	PARTS NO.	DESCRIPTION	
COMPL PWB,PW-1			
COMPL.NO	613 160 3615		
(INTEGRATED CIRCUIT)			
IC541	409 344 6509	IC UPC1093T	
(DIODES)			
D5301	407 169 5608	PHOTO COUPLE PC123U2	
D5303	407 148 7609	DIODE DAN217-T146	
(CAPACITORS)			
C5301	403 130 3109	CERAMIC	0.047U K 50V
C5303	403 070 2606	CERAMIC	0.1U Z 50V
C5401	403 130 3109	CERAMIC	0.047U K 50V
C5402	403 069 1702	CERAMIC	1000P K 50V
(RESISTORS)			
R5301	401 037 5400	MT-GLAZE	1K JA 1/10W
R5302	401 038 7809	MT-GLAZE	56K JA 1/10W
R5303	401 037 5608	MT-GLAZE	10K JA 1/10W
R5307	401 037 5004	MT-GLAZE	0.000 ZA 1/10W
R5401	401 038 3504	MT-GLAZE	330 JA 1/10W
R5402	401 038 7601	MT-GLAZE	560 JA 1/10W
R5403	401 038 7601	MT-GLAZE	560 JA 1/10W
R5404	401 038 5102	MT-GLAZE	3.9K JA 1/10W
R5405	401 038 2101	MT-GLAZE	2.7K JA 1/10W
R5406	401 038 3504	MT-GLAZE	330 JA 1/10W
R5407	401 038 2101	MT-GLAZE	2.7K JA 1/10W

****

COMPL PWB,MC-1			
COMPL.NO	613 160 1574		
(CAPACITOR)			
C8001	403 121 9509	CERAMIC	0.1U Z 50V
(RESISTORS)			
R8001	401 016 4707	CARBON	22K JA 1/4W
R8002	401 012 6903	CARBON	10K JA 1/4W
R8003	401 017 0708	CARBON	270 JA 1/4W
R8004	401 014 2804	CARBON	150 JA 1/4W
(SWITCHES)			
S8002	645 003 4589	SWITCH,DETECTOR 1P-1T	
OR	645 009 3388	SWITCH,DETECTOR 1P-1T	
(MISCELLANEOUS)			
1011J	613 152 4002	SPACER,MC1	

****

FLEXIBLE FLAT CABLE		
	645 008 9992	FLEXIBLE FLAT CABLE CN301-S711

5. MECHANISM DISASSEMBLY

Use this service manual together with the mechanism service technical information of VR426NVA(Part No. TP30056) published in 1995.

Outline

This model uses two types of mechanism-the V95I mechanism and V95II mechanism.

The V95 II mechanism has the same basic structure as the V95 I mechanism, but the part for mounting its cylinder assembly has been changed.

The cylinder assembly of the V95 I mechanism requires a die casting cylinder mounting to be mounted. In the V95 II mechanism, the cylinder assembly can mounted directly to the mechanism chassis due to changes made in the chassis form.

As the V95 II mechanism does not require a cylinder mounting, its cylinder assembly and S • T incline mounting assemblies are replaced differently from the V95 I mechanism.
This manual describes only the methods for replacing the cylinder assembly and S • T incline mounting assemblies. For other information, refer to the Service Technical Information (Reference No. MM531433).

For other information, refer to the Mechanism Service Technical Information of VR 426NVA(Part No. TP30056).

[Page 13]

3-5-3. CYLINDER MOTOR (ROTOR AND STATOR) (See Fig.3-5-6)

1) Refer to section 3-2 and remove the mechanism unit.
2) Remove the screw ① and remove the cylinder earth assembly ②.
3) Remove the two screws ③, the rotor ④ and the spacer ⑧.
4) Remove the three screws ⑤ and the stator ⑥.

ASSEMBLY NOTES:

1. When fitting the rotor ④, align the long hole ⑨ -beside the triangular mark on the rotor ④ - with the hole ⑩ in the rotor disk.
2. When fitting the screws ③ and ⑤, use the torque gauge screwdriver (VHJ-0014). Give the screws a tightening torque of 3 kg/cm.
3. Align the dowels ⑪ on the cylinder earth assembly ② with the holes ⑫ in the chassis.
4. After fitting the mechanism unit, do the switching position adjustment of the servo circuit.

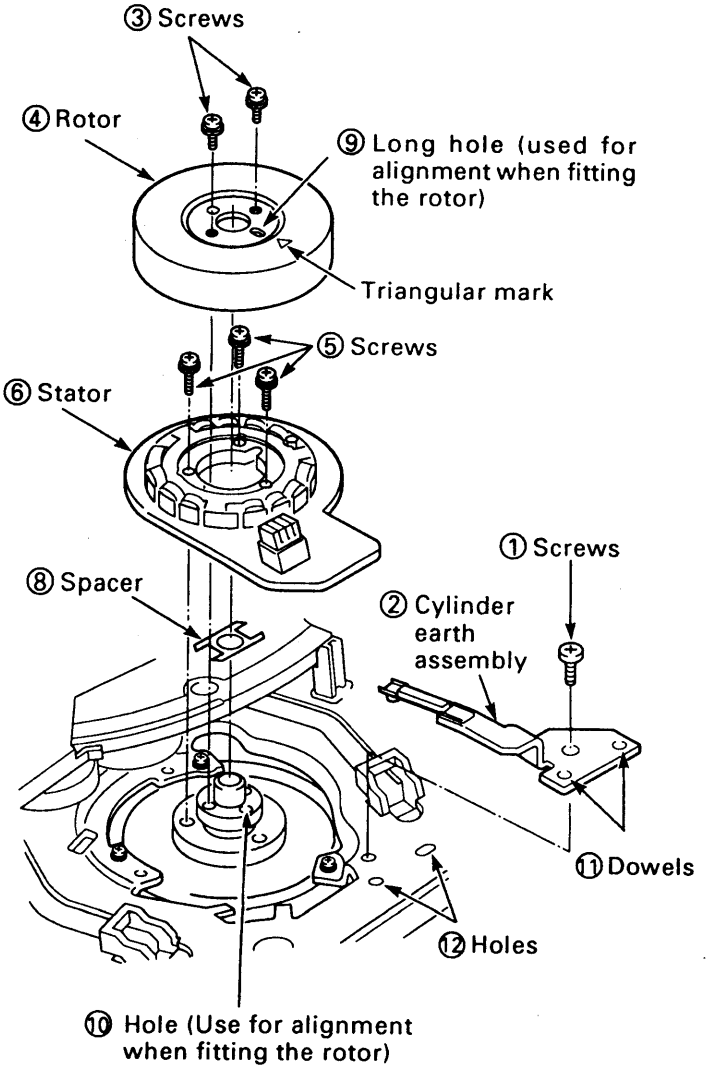


Fig.3-5-6

[Page 14]

3-5-4. CYLINDER ASSEMBLY (See Fig.3-5-7)

1) Refer to sections 3-5-3, and remove the cylinder unit, the rotor, and the stator.
2) Remove the three screws ① and the cylinder assembly ②.

ASSEMBLY NOTES:

1. Be careful not to scratch or soil the top of the cylinder. After fitting the cylinder, clean the surface.
2. Align the cylinder assembly ② with the two dowels ④ on the mechanism chassis ③.
3. After fitting the cylinder assembly, do the tape path adjustment as instructed in section 4-3 and do the switching position adjustment of the servo circuit.

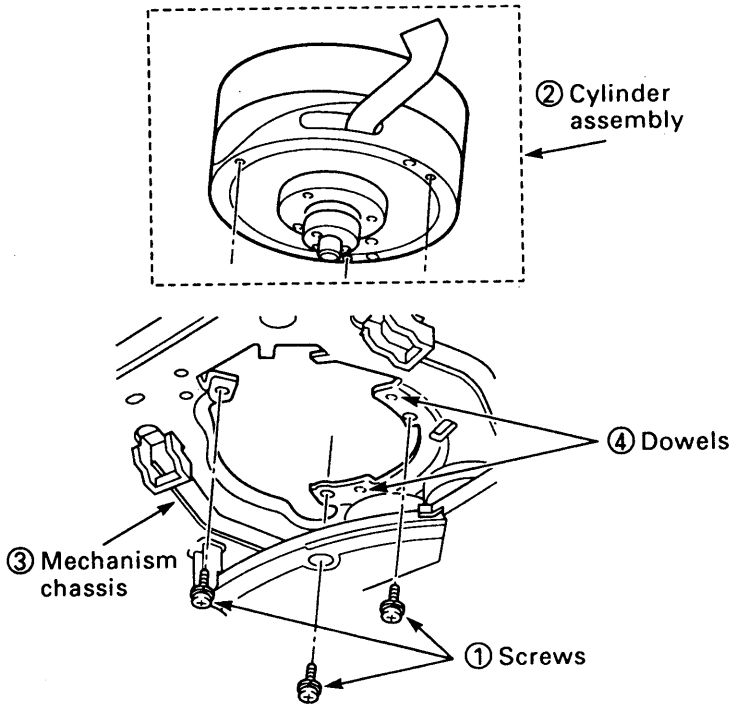


Fig.3-5-7

[Page 22]

3-14-2. S AND T INCLINE MOUNTING ASSEMBLIES (See Fig.3-14-2)

1) Refer to section 3-2 and remove the mechanism unit.
2) Refer to section 3-4 and remove the cleaner lever.
3) Remove the four screws ⑤ and take off the two catcher mountings ⑥.
4) Refer to section 3-1 and rotate the loading motor in the PLAY direction until tape loading is completed.
5) Shift the S incline mounting assembly ① slightly, in the direction of the arrow Ⓐ, then remove it from the S load lever assembly ②.
6) Shift the T incline mounting assembly ③ slightly, in the direction of the arrow Ⓑ, then remove it from the T load lever assembly ④.

ASSEMBLY NOTES:

1. Apply grease (VHJ-0100) to the rail (top, underside and sides) on the mechanism chassis.
2. When fitting the S and T incline mounting assemblies ① and ③ into the rail, turn the loading motor manually in the EJECT direction. When tape unloading begins, watch out in case the S and T incline mounting assemblies ① and ③ get caught in the rail.
3. Aline the dowels on the catcher mounting ⑥ with the holes ⑦ in the mechanism chassis.
4. After replacing the parts, clean the cylinder and the roller guide, then adjust the tape path as described in section 4-3.

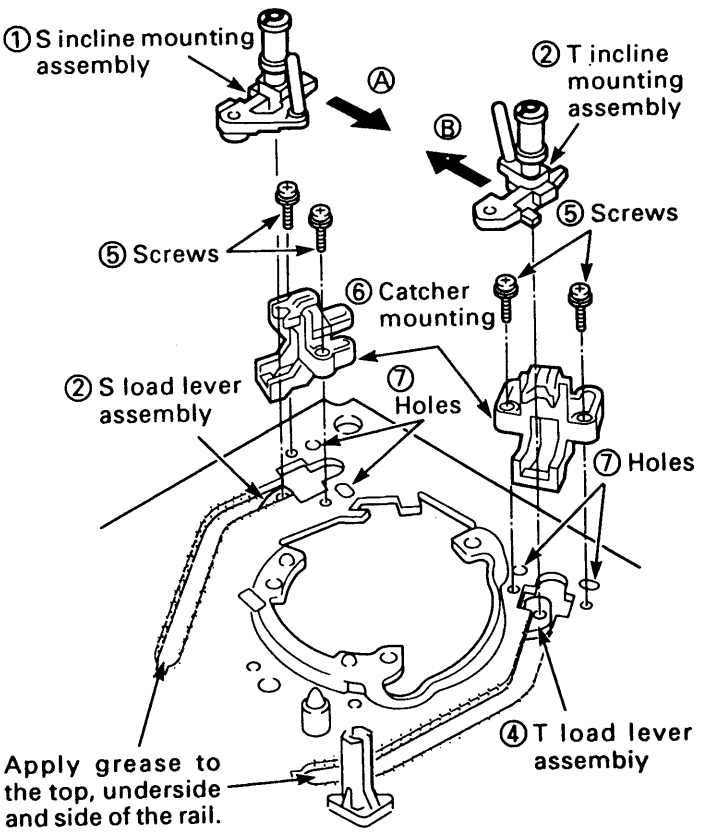


Fig.3-14-2

Parts No. TPH1807

Parts number for Mechanical Service Manual TP30056

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The Park Centre, Arlington Business Park,
Theale, Reading, Berkshire RG7 4SA

Apr./'96/150 NS Printed in Japan

SM531532

VR412LVA

BLOCK DIAGRAMS,CIRCUIT DIAGRAMS & PRINTED WIRING BOARDS

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VIDEO CIRCUIT 4
SYSTEM CONTROL & SERVO CIRCUIT 7
AUDIO CIRCUIT 10

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REFERENCE No.SM531532
TPH1807

NOTES:

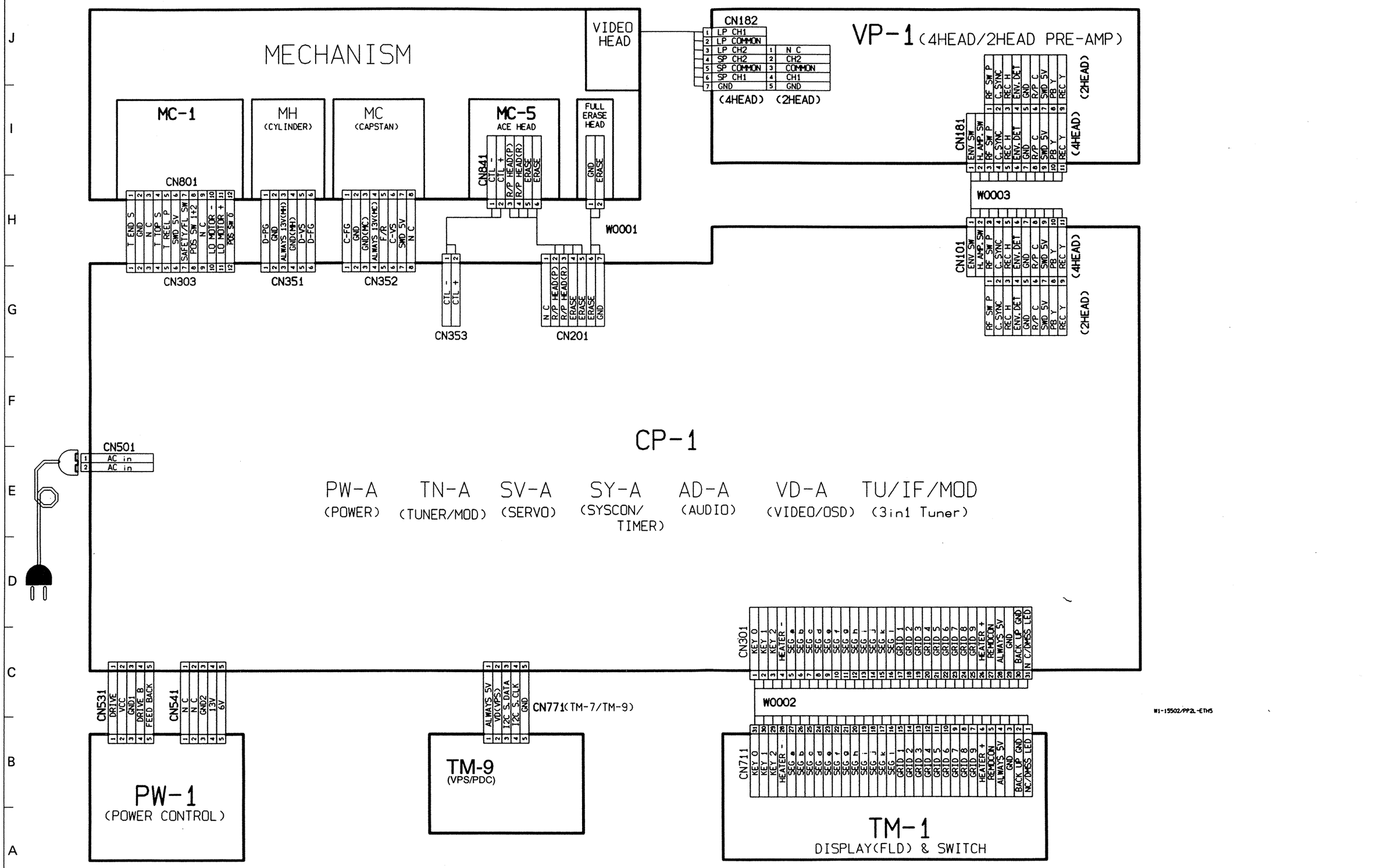
1. All resistance values in "OHMS" unless otherwise noted.
   (K=1,000 ; M=1,000,000)
2. All capacitance values in "μF" unless otherwise noted.
   p=pico farad ; μ ,u or U=micro farad
3. All inductance values in "μH" unless otherwise noted.
   μ ,u or U=micro henry ; m=milli henry

PRODUCT SAFETY NOTICE

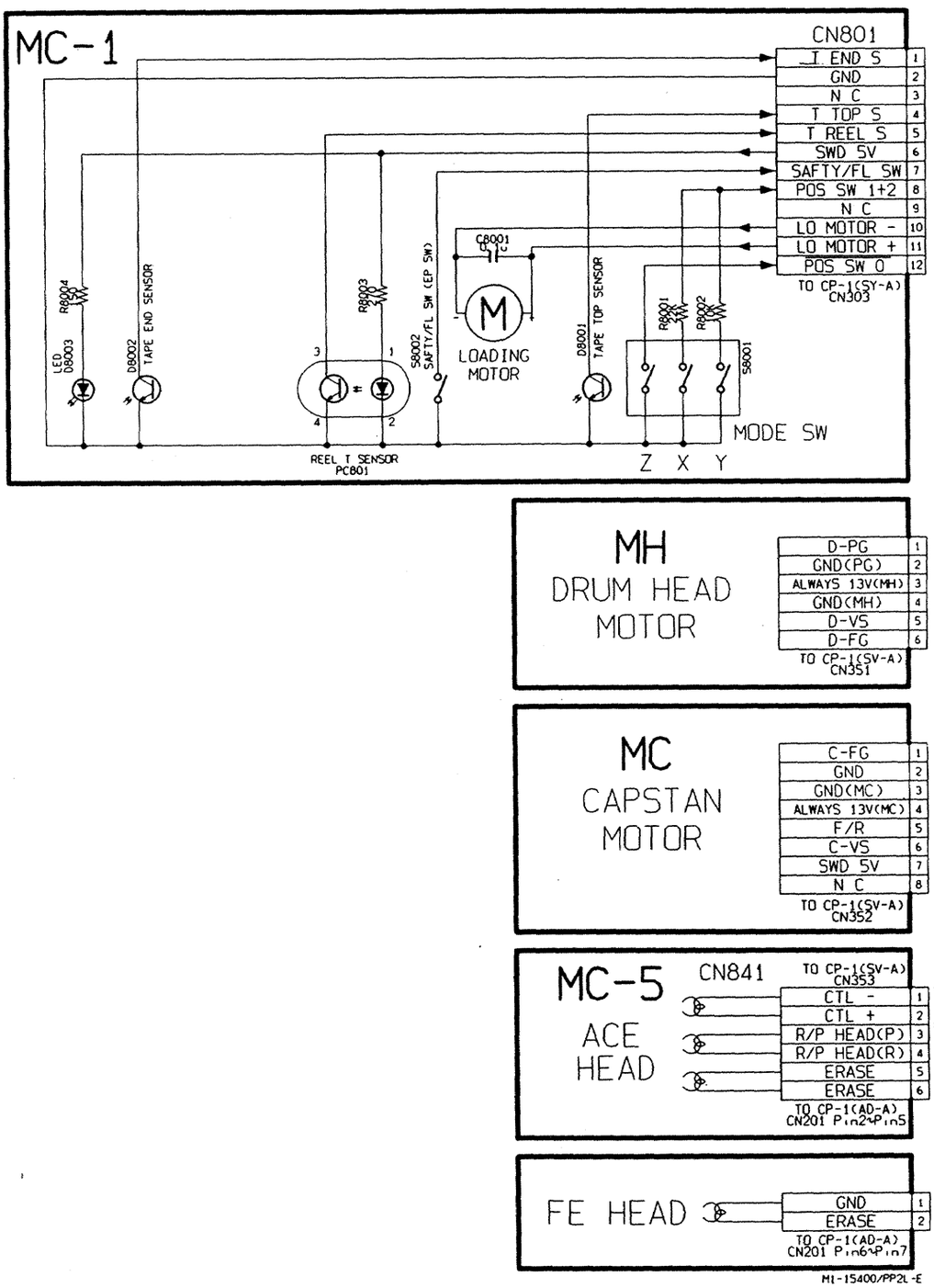
THE COMPONENTS DESIGNATED BY A SYMBOL (⚠) IN THIS SCHEMATIC DIAGRAM DESIGNATES COMPONENTS WHOSE VALUE ARE OF SPECIAL SIGNIFICANCE TO PRODUCT SAFETY.
SHOULD ANY COMPONENT DESIGNATED BY A SYMBOL NEED TO BE REPLACED, USE ONLY THE PART DESIGNATED IN THE PARTS LIST.
DO NOT DEVIATE FROM THE RESISTANCE, WATTAGE AND VOLTAGE RATINGS SHOWN.

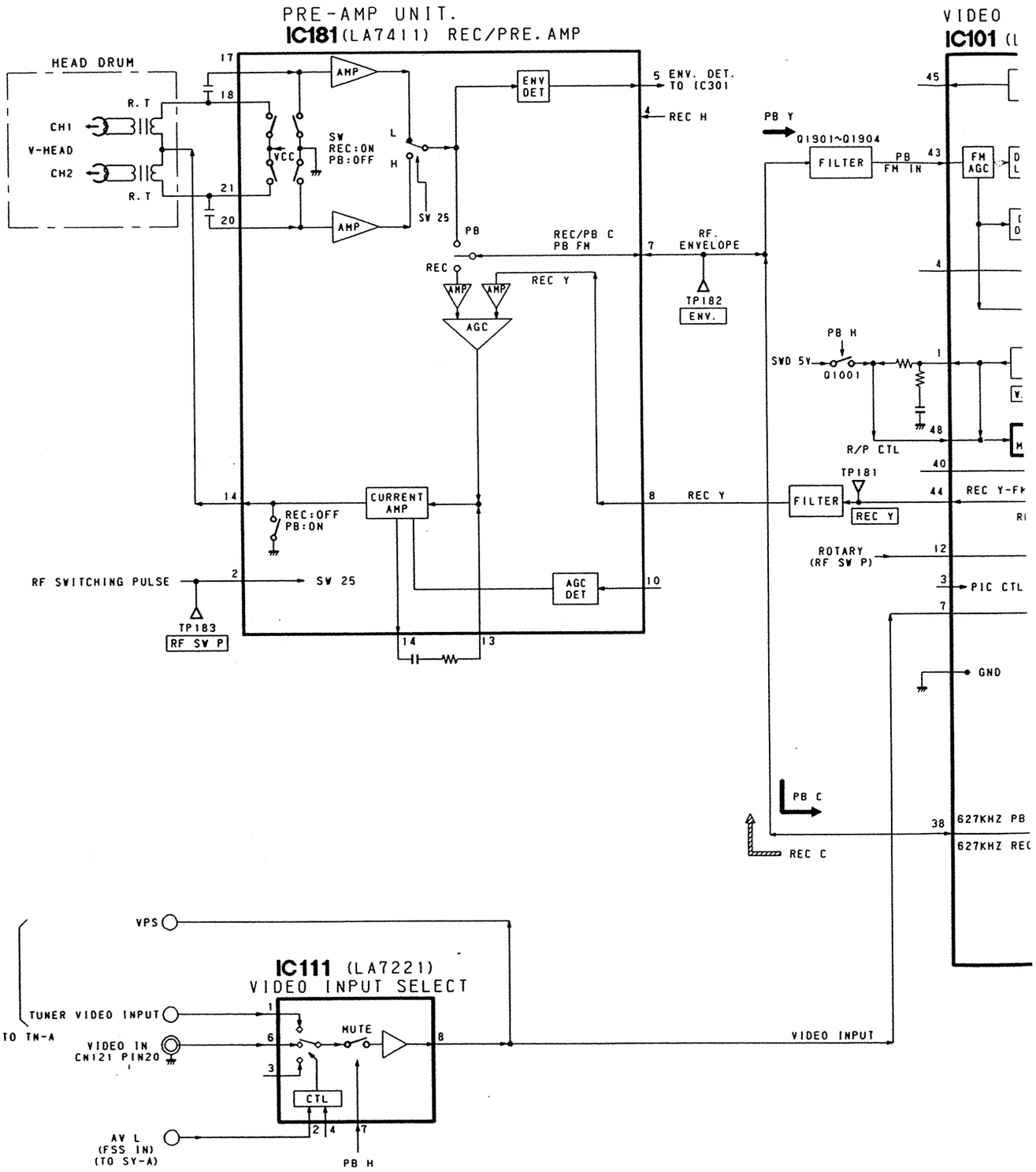
1. OVERALL WIRING,MECHANISM CONNECTION, & BLOCK DIAGRAMS

OVERALL WIRING

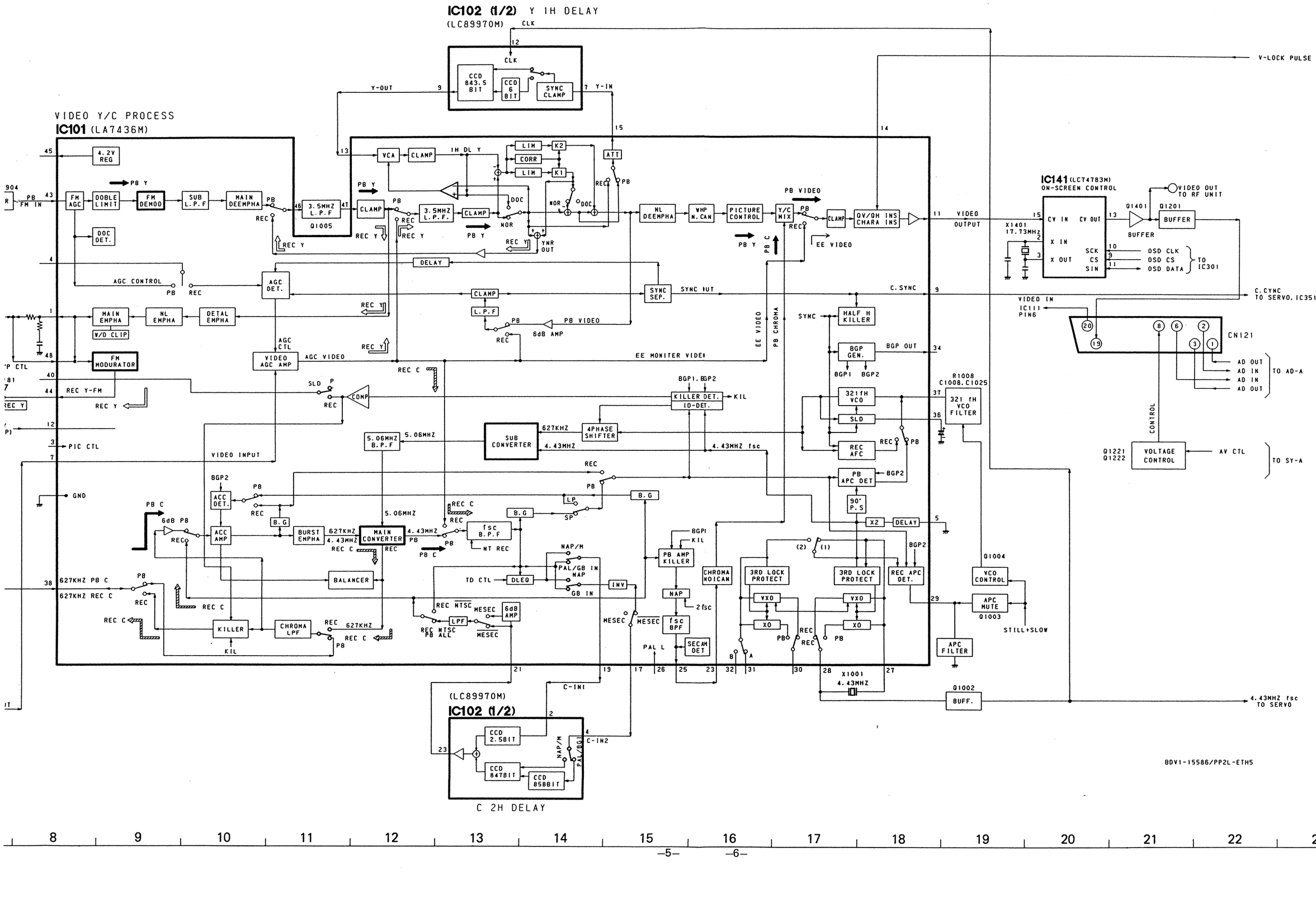


MECHANISM CONNECTION




PRE-AMP UNIT.
IC181 (LA7411) REC/PRE.AMP
HEAD DRUM
R.T
CH1
V-HEAD
CH2
R.T
AMP
AMP
SW REC:ON PB:OFF
VCC
L
H
SW 25
ENV DET
5 ENV. DET. TO IC301
REC H
PB
REC/PB C PB FM
7
RF. ENVELOPE
TP182 ENV.
REC
AMP
AMP
REC Y
AGC
CURRENT AMP
REC:OFF PB:ON
14
8
REC Y
RF SWITCHING PULSE
2
SW 25
TP183 RF SW P
AGC DET
10
14
13
VIDEO
IC101 (L
45
PB Y
Q1901~Q1904
FILTER
PB FM IN
43
FM AGC
4
PB H
SWD 5Y
Q1001
1
48
R/P CTL
40
TP181
FILTER
REC Y
44
REC Y-FM
ROTARY (RF SW P)
12
3
PIC CTL
7
GND
PB C
38
627KHZ PB
627KHZ REC
REC C
VPS
IC111 (LA7221)
VIDEO INPUT SELECT
TUNER VIDEO INPUT
TO TN-A
VIDEO IN CN121 PIN20
AV L (FSS IN) (TO SY-A)
1
6
3
MUTE
8
CTL
2
4
7
PB H
VIDEO INPUT

VIDEO CIRCUIT



SYSTEM CONTROL & SERVO CIRCUIT

IC301 MPU (CP-1 BOARD)
SYSTEM CONTROL, TIMER, TUNING CONTROL (LC866740A)

POWER UP 98 → POWER UP L (TO PW-A)
CF1 16 — X3001 6.5MHz
CF2 17
CLK1 13 — X3002 32KHz
CLK2 14
PB-Y IN (ENV DET (VP-1)) → ENV. 25
BACK UP 5V (18, 90, 47) → BACK UP 5V (VDD)
T SPEED 23
YISS H 8
IC303 INITIALIZE RESET → RESET 12
MC-BR 5
CTL P 33
C-FG P 31
IC302 (L1643) LOADING MOTOR DRIVER
MECHANISM
LOADING MOTOR (ML) 10, 2 → 3, 4 → ML-SPEED 99, ML-DIMENSION 100
ERASE PREVENTION SWITCH → FL+SAFTY 10
MECHANISM MODE SWITCH (ROTARY SW) → POS SW 0, POS SW 1+2
TAKE-UP REEL SENSOR → T REEL S. 21
TAPE TOP SENSOR → T. TOP-S 20
TAPE END LED
TAPE END SENSOR → T. END-S 19
FL START SW
A MUTE 97 → A MUTE
PB H 96 → PB H
REC H 95 → REC H
AV L (FSS IN) 87 → AV L (FSS IN)
INPUT SEL A 79 → INPUT SEL A
STILL+SLOW 91 → STILL+SLOW
AV CTL 83 → AV CTL
SHORT TEST 30 → SHORT TEST
→ TO VD-A OF AD-A
RF SW P 35
CAP P 7
DRUM UP 3
C-YS CUT 6 → C-YS CUT
SS+DRUM SHIFT 4
SY. S. CLK 75
SY. S. DATA 73
IC602 (CP-1 BOARD) ROM
S. CLK 78 — S. CLK
I2C S. DATA 77 — I2C S. DATA
ALWAYS -23V 48
KEY IN 0 ~ KEY IN 3 (65–68)
OPERATION KEY-MATRIX (a ~ j (KEY SCAN))
S. DATA 76, OSD CS 74, OSD CLK → IC141 ON SCREEN CONTROL
ALWAYS 5V 29 → POWER DOWN
SEG a, SEG i (18, 60)
AT101 (TM-1 BOARD) DISPLAY (FLD)
SEGMENT G1 ~ G8 (10, 16)
GRID
HEATER AC
RR711 (TM-1 BOARD) IR REMOTE CONTROL RECEIVER → REMOCON 36
SDA 13, SCL 11 — IC771 (TM-0) PDC — VIDEO 5 → TO VPS/PDC (TO VD-A)
PWM/CE 80
PLL/S. DATA 81
PLL CLK 82
TEST SIGNAL 63
TUNER PWM 80
H SYNC 1 → C. SYNC TO VD-A
BAND 1 81
BAND 2 82
AFT MUTE 37
AFT C 24

TUNER UNIT. (3 IN 1 TUNER)

ANT → TU BLOCK → TU 8 → PWM DET. (Q6921, R6921~R6926, C6924~C6926) → TUNER PWM 80
VB 14, HB 15, LB 9 ← SWD 12V
AFT IN 13
IF BLOCK
AFT OUT 22
V. OUT 26 → V. OUT (TO VD-A)
A. OUT 20 → A. OUT (TO AD-A)
MOD. TO TV
V. IN 4 ← V. IN (TO VD-A)
A. IN 5 ← A. IN (TO AD-A)

IC351 DIGITAL SERVO (XLU/BU2899K)

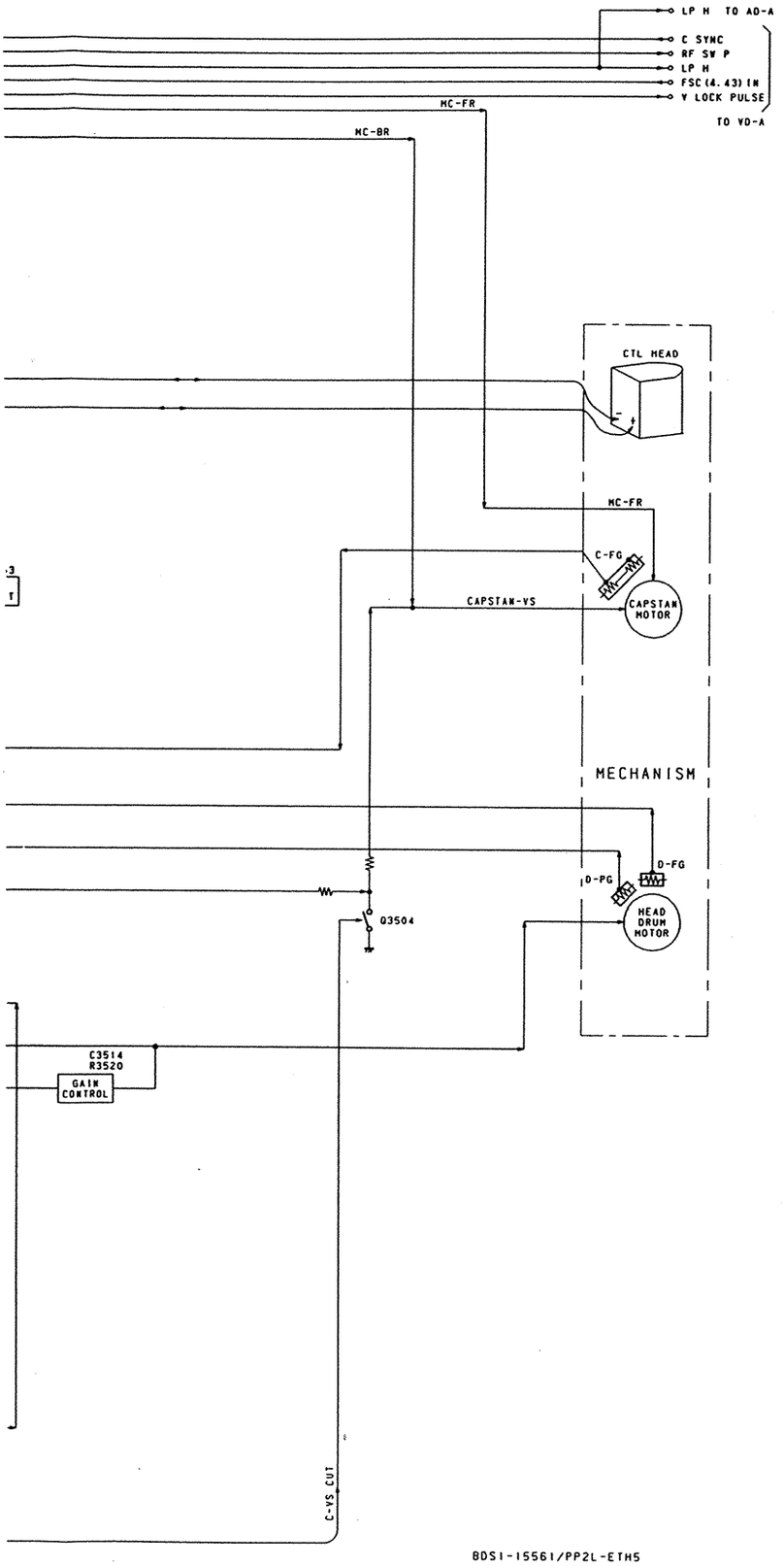
D3502
MC-BR 16
CTL P 15
C-FG P 14
MC-F/R 13
V LOCK P 12
C. SYNC 11
RF SW P 9
ALWAYS 5V (SWITCHING POSITION) → VR351 (SW MN) → D-PG MN 8
SY S CLK 7
SY S DATA 6
PORT I OUT 4 ← Q3503
4.43MHZ → FSC IN 3 → FSC AMP → CLOCK
VSS 2 → GND (DIGITAL)
CFV OUT 1
CPV OUT 44
ALWAYS 5V → D-VDD 43 → VDD (DIGITAL)
DFV OUT 42
DPV OUT 41
HEAD AMP SWITCHING 40

MC-BR LOGIC
VP WIDTH
VP DELAY
H-PULSE GEN.
DIGITAL M.M.
SYNC SEP. (H-SYNC, V. SYNC)
VP TIMING
SW P GEN.
D-PG M.M.
SERVO DATA DET. → MODE CONTROL
CAPSTAN SPEED CONTROL ROM (PWM)
CAPSTAN PHASE CONTROL (PWM)
CAP REF-COUNTER
DRUM SPEED CONTROL ROM (PWM)
DRUM PHASE CONTROL ROM (PWM)
L.P.F (D/A CONVERTER)
HEAD SWITCH LOGIC

CTL DUTY DET. → CTL DUTY 18
1/2
TAPE SPEED DET. → TAPE SPEED 19
REC / PB
REC CTL
CTL REC AMP
F.F
SYNC DISCRIMINATION
REF-COUNTER
CTL COUNTER
C-FG COUNTER
1/M
CTL DELAY
TRACKING DIGITAL M.M.
D-FG COUNTER
CTL R
CTL F
VDD
AMP BIAS
CTL PB AMP
SWD 5V
GND (ANALOG)
A-GND
AGC
CTL AMP
CAPSTAN FG AMP
DRUM FG AMP
DRUM PG AMP
CAPSTAN MIX AMP
DRUM MIX AMP
MOTIVE IMPROVEMENT
GAIN CONTROL
FREQUENCY RESPONSE SELECTOR
Q3581

0/1 DATA 18
BIAS (FG AMP) 20
REC CTL- 21
REC CTL+ 22
CTL AMP - 25
CTL AMP OUT 26
C-FG AMP OUT 27
C-FG IN 28
D-FG IN 29
D-PG IN 30
CAPSTAN-MIX OUT 31
CAP MIX- 32
CAP MIX+ 33
MIX OUT 34
DRM MIX- 35
DRM MIX+ 36
SLOW+STILL 37
MODE CONTROL (SLOW. STILL. DRUM CTL) 38
C3514 R3520

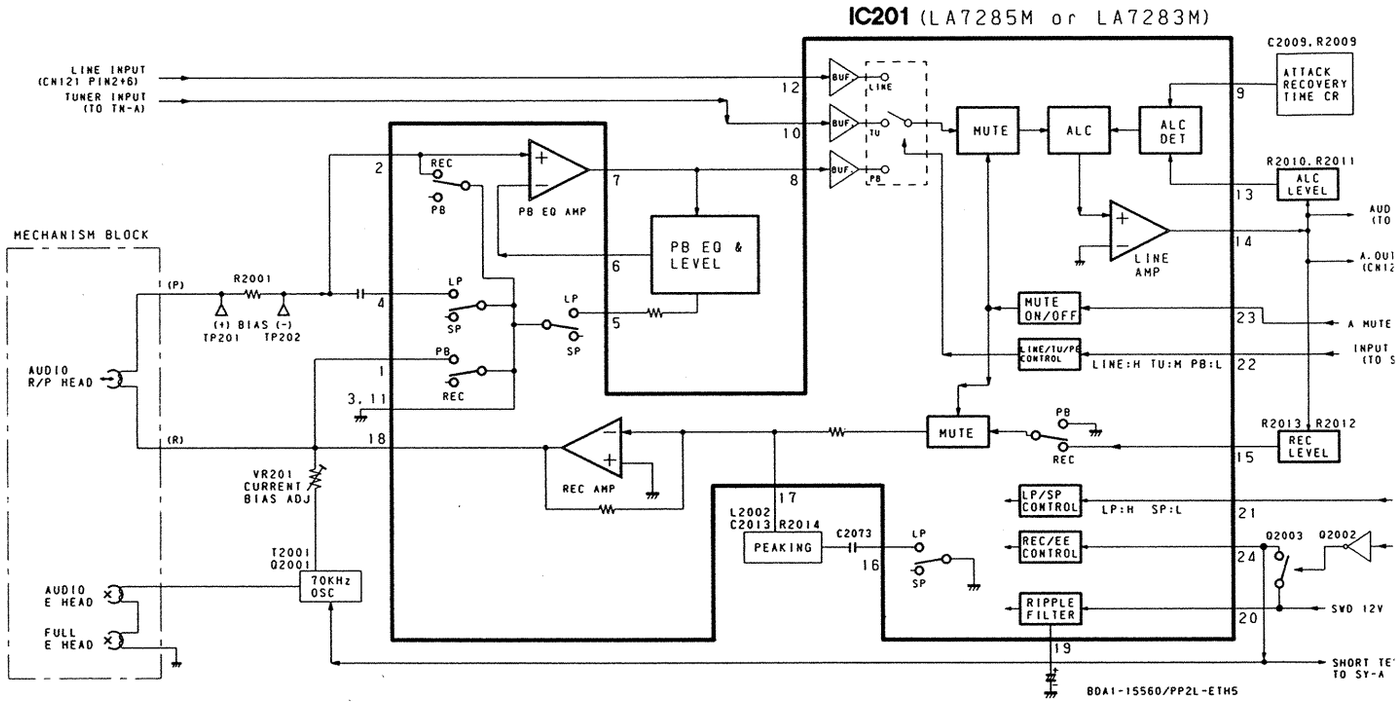
L.P.F D/A CONVERTER
L.P.F D/A CONVERTER
L.P.F D/A CONVERTER
L.P.F D/A CONVERTER



BDS1-15561/PP2L-ETH5

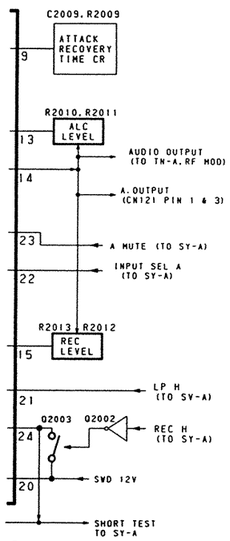
16 17 18 19 20 21 22 23

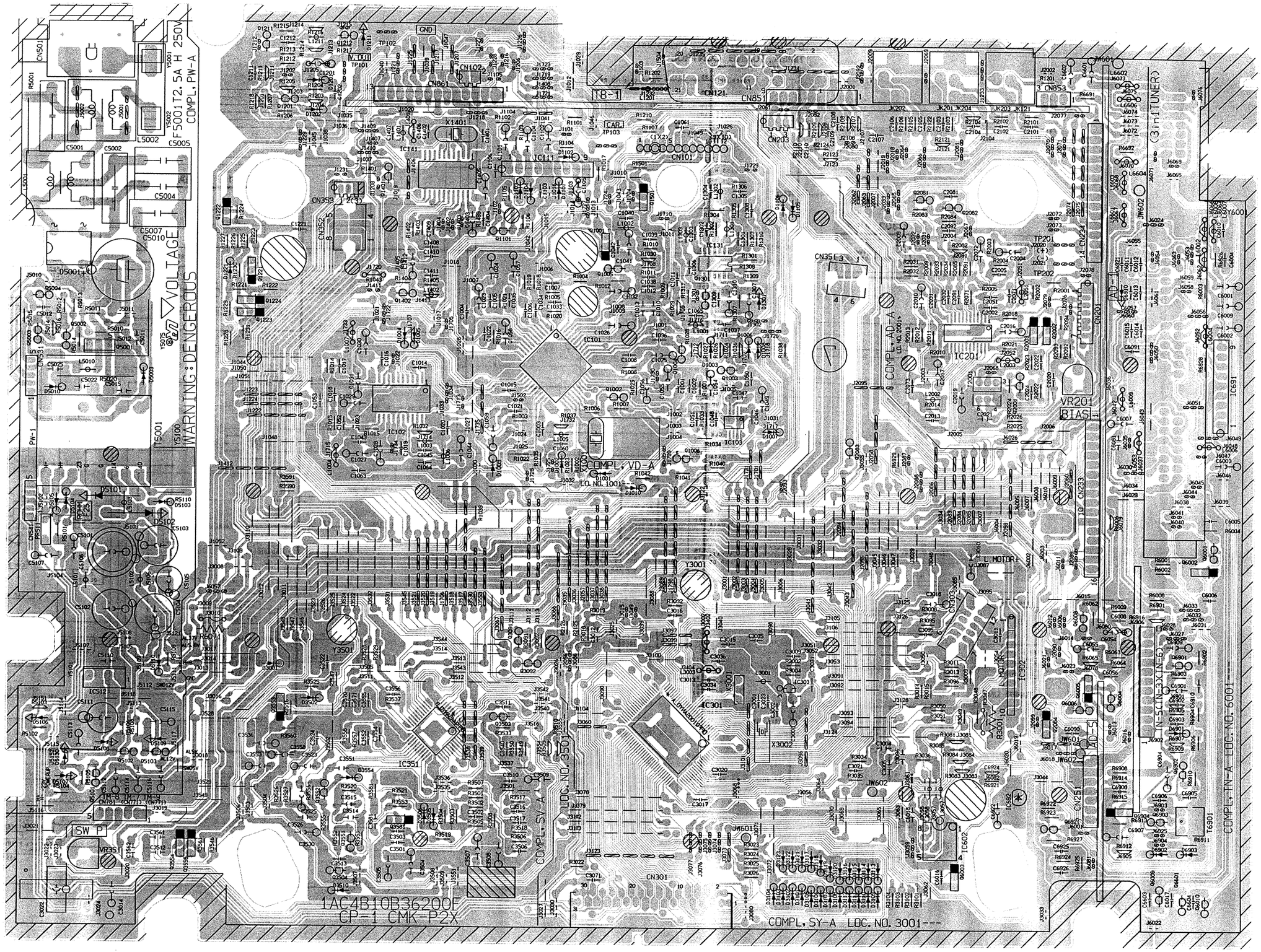
AUDIO CIRCUIT



2. CIRCUIT DIAGRAMS & PRINTED WIRING BOARDS (P.W.B.)

CP-1 P.W.B.

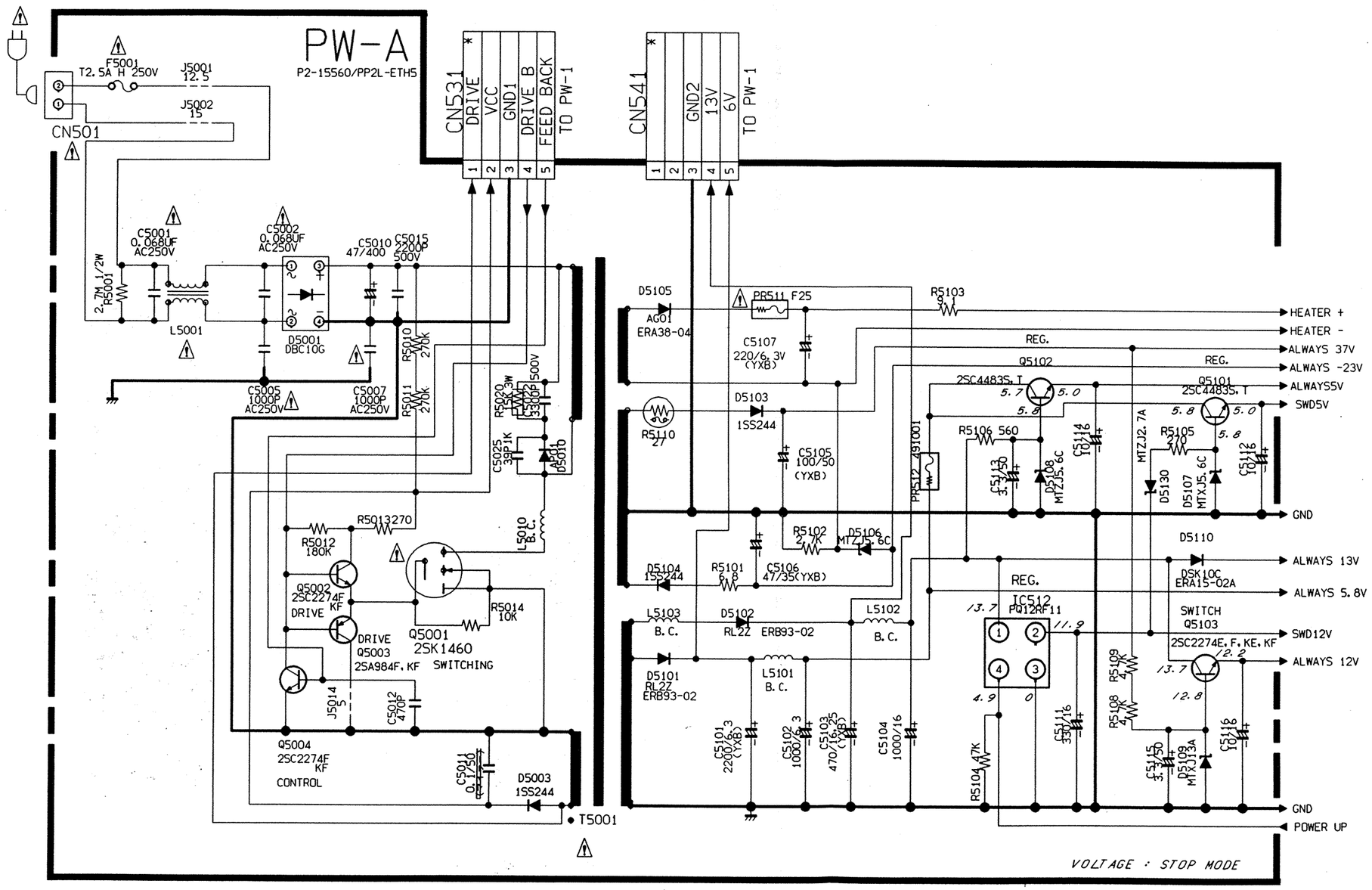




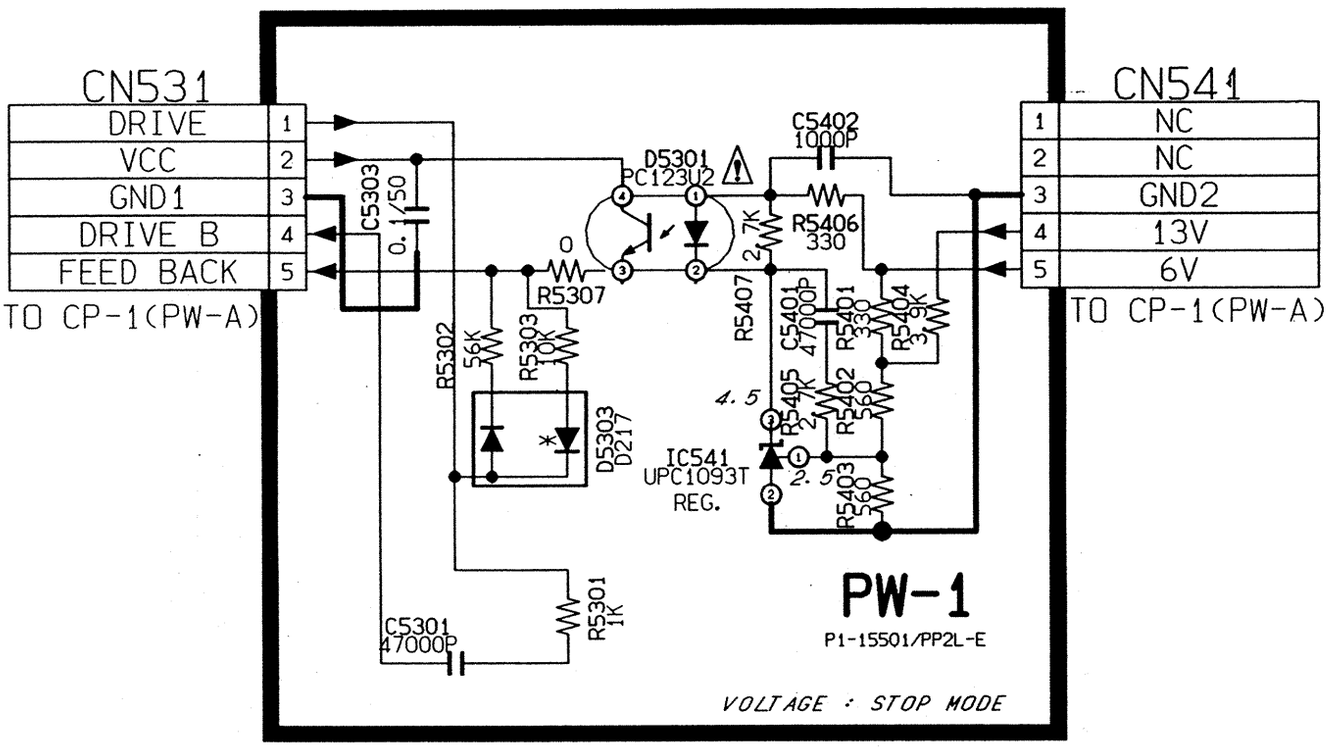
8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

—11— —12—

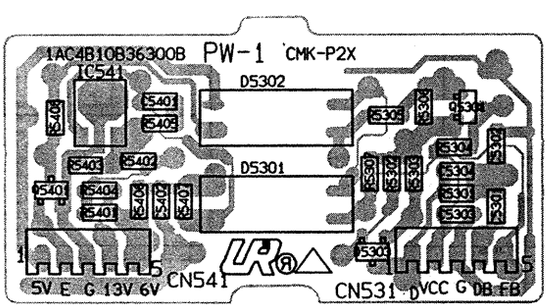
CP-1 BOARD (PW-A) POWER SUPPLY



PW-1 BOARD POWER SUPPLY

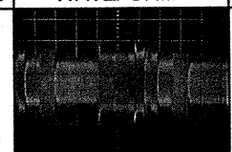
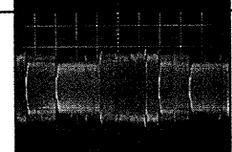
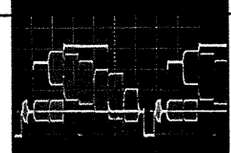
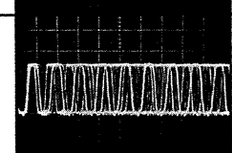
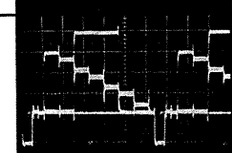
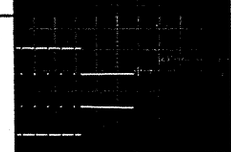
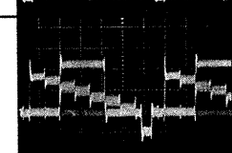
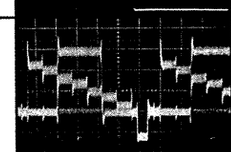
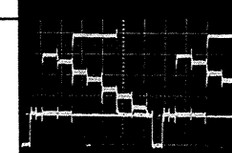
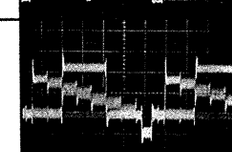
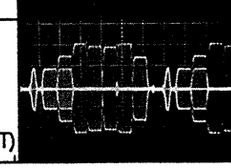


PW-1 P.W.B.

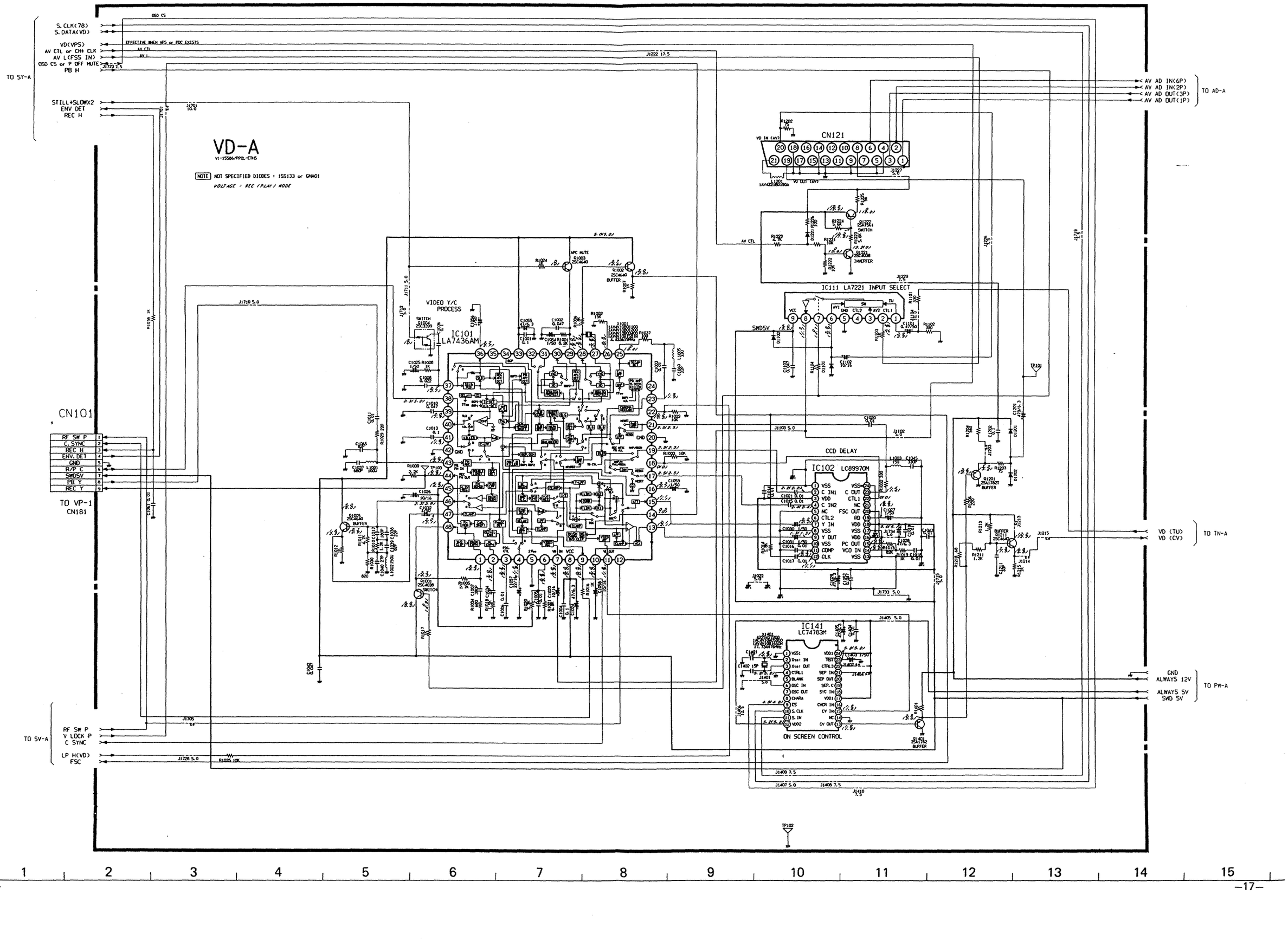


VIDEO CIRCUIT WAVEFORMS

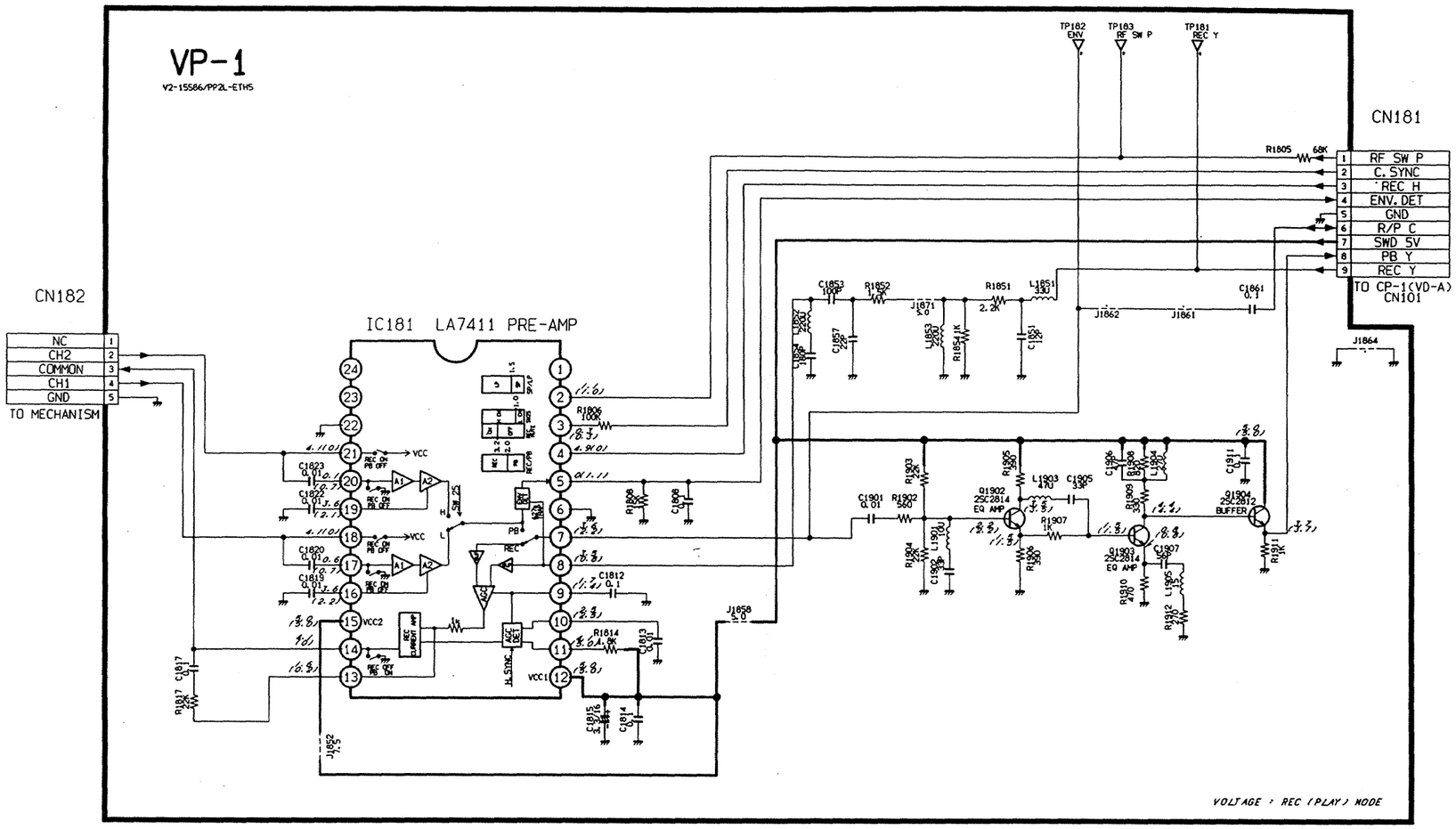
WF-V-TR

TEST LOCATION	WAVEFORM	MODE / LEVEL	TEST LOCATION	WAVEFORM	MODE / LEVEL
IC 101 Pin 1		REC, EE 0.5Vp-p	IC 101 Pin 38 (PB CHROMA IN)		PB 0.3Vp-p
IC 101 Pin 7 (VIDEO IN)		REC, EE 1.0Vp-p	IC 101 Pin 43 (PB FM IN)		PB 0.6Vp-p
IC 101 Pin 11 (VIDEO OUT)		REC, EE 2.0Vp-p	IC 101 Pin 44 TP103 (REC FM OUT)		REC 2.0Vp-p
IC 101 Pin 11 (VIDEO OUT)		PB 2.5Vp-p	IC 101 Pin 46		REC, EE 0.5Vp-p
IC 101 (UPPER) Pin 11 (LOWER) Pin 14		STILL (UPPER) 2.0Vp-p (LOWER) 5.0Vp-p	IC 101 Pin 46		PB 0.6Vp-p
IC 101 Pin 13 Pin 15		PB 0.4Vp-p	IC 101 Pin 47		REC, EE 0.5Vp-p
IC 101 Pin 17 Pin 19 Pin 21		PB 0.4Vp-p	IC 101 Pin 47		PB 0.6Vp-p
IC 101 Pin 38 (REC CHROMA OUT)		REC 0.4Vp-p			

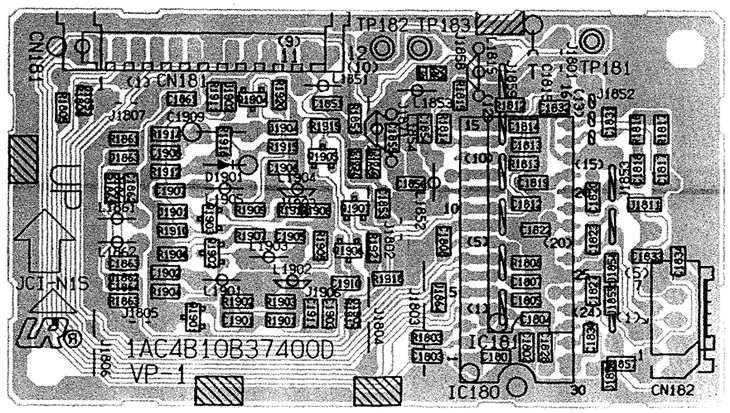
CP-1 BOARD (VD-A) VIDEO



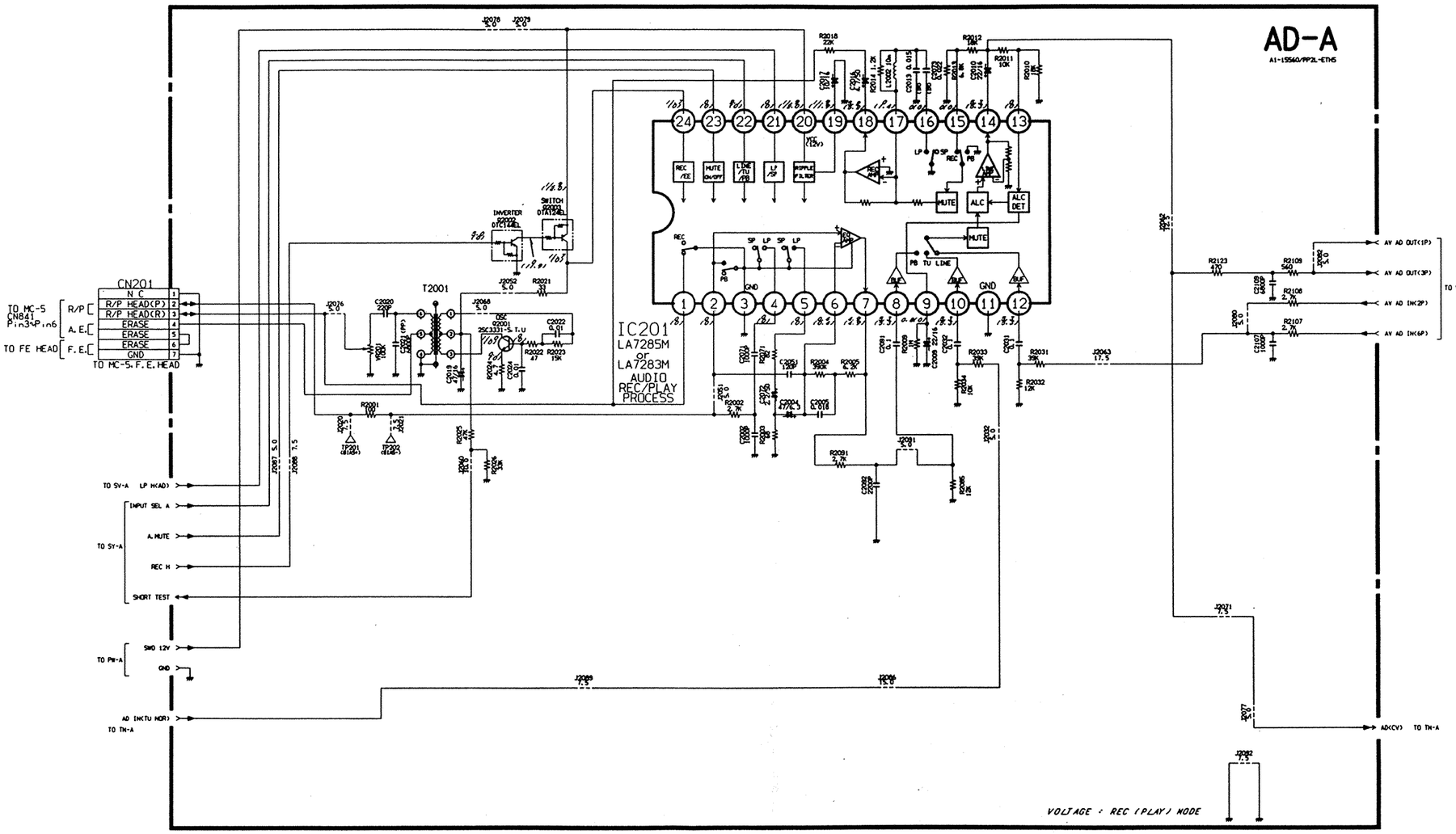
VP-1 BOARD VIDEO PRE-AMP



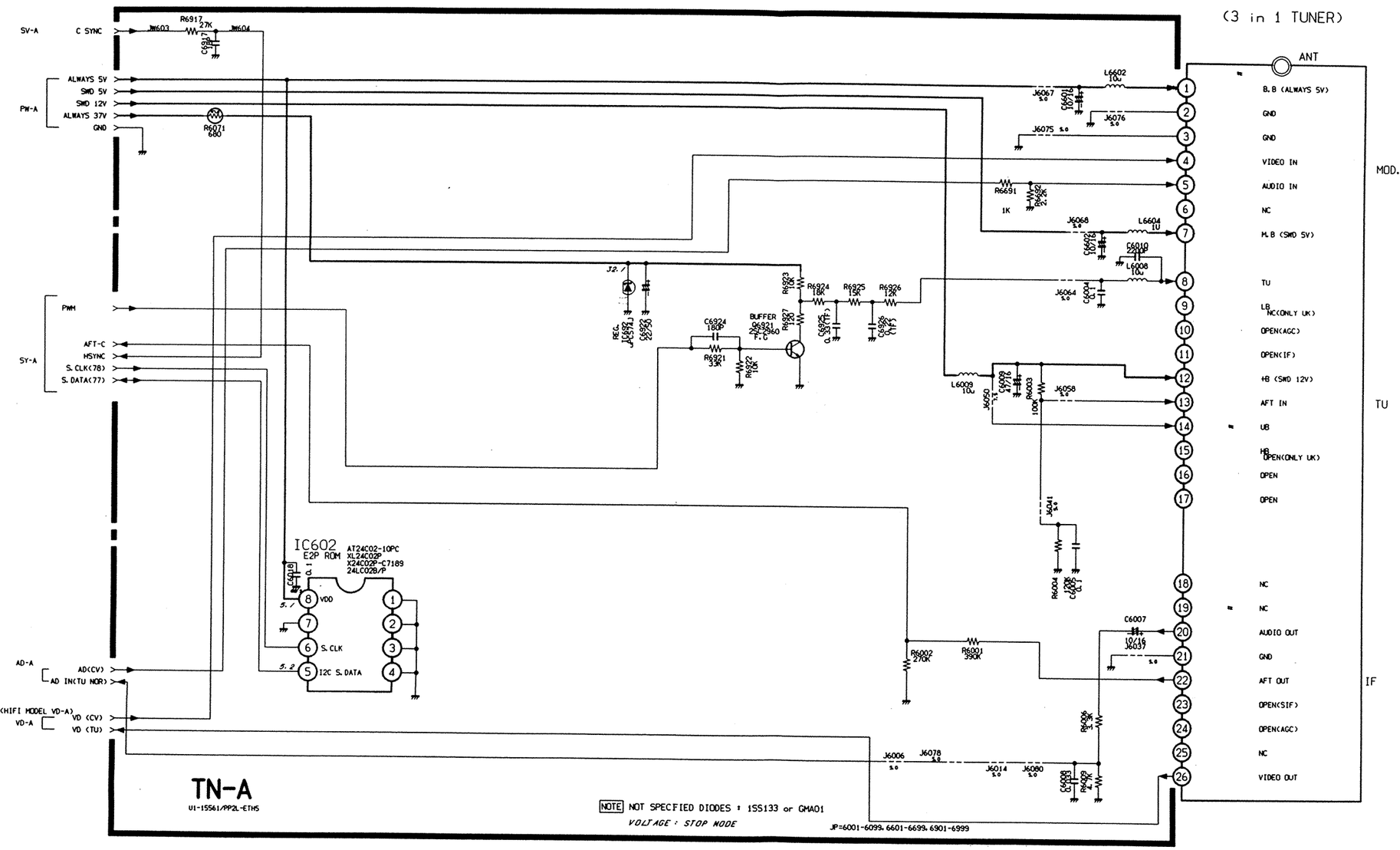
VP-1 P.W.B.



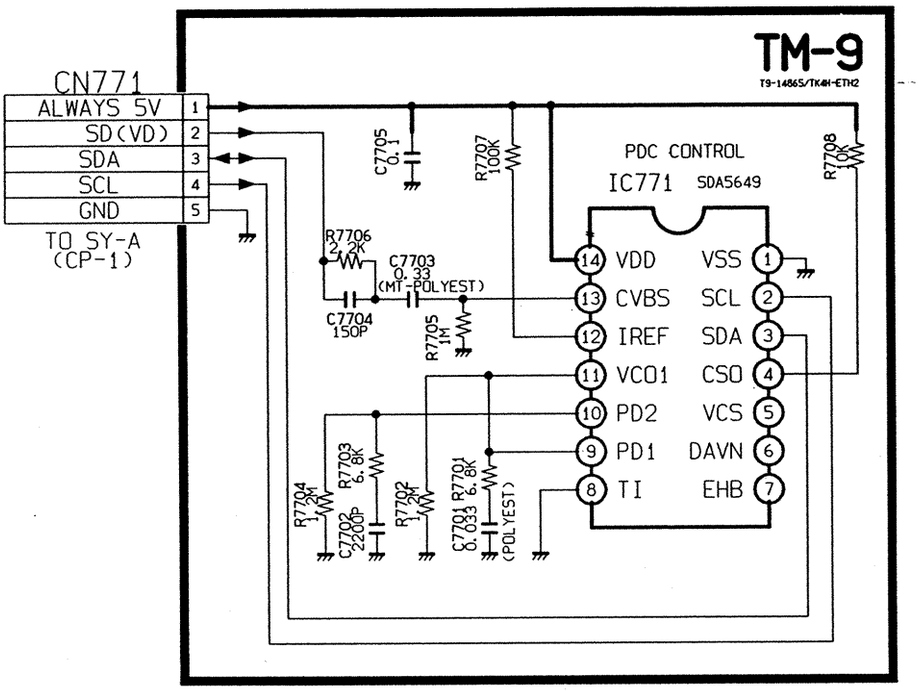
CP-1 BOARD (AD-A) AUDIO



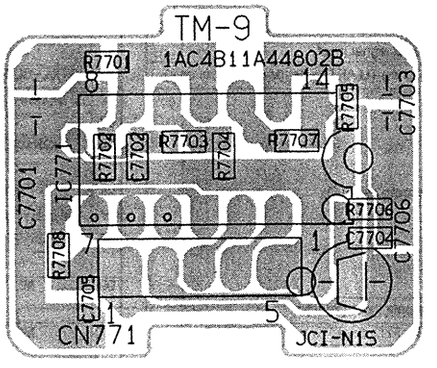
CP-1 BOARD (TN-A) TUNER IF CONNECTION



TM-9 BOARD PDC



TM-9 P.W.B.



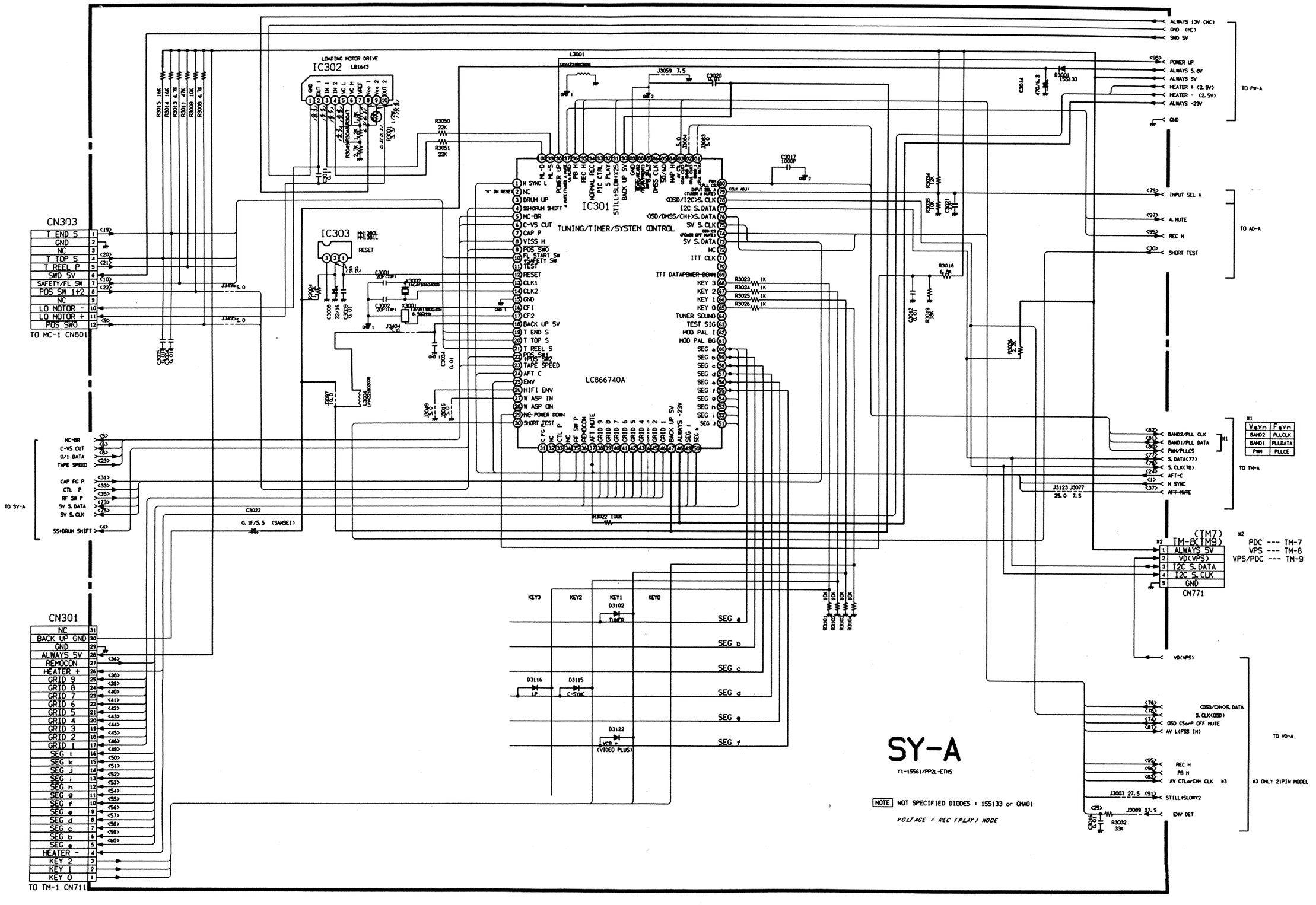
IC301 SYSTEM CONTROL,TIMER, & TUNING CONTROL MPU PIN FUNCTIONS TABLE

No.	Name	I/O	I/O Signal Function
1	H SYNC L	I	Sync. signal input for existing channel discrimination and TV system discrimination.
2	-	-	-
3	DRUM UP	O	Head drum motor rotation speed up signal.
4	SS + DRUM SHIFT	O	Signal for indicating SLOW/STILL modes and alternation of drum motor control data. (3 value voltage)
5	MC - BR	O	Brake signal for capstan motor.
6	C - Vs CUT	O	Cut off for capstan motor control voltage in SLOW / STILL modes.
7	CAP P.	O	Gain down control for Head Motor at SLOW mode.
8	VISS H	I	CTL pulse duty detection signal input. Used for VISS detection.
9	POS SW0	I	Data indicating operation position of mechanism. (0V : SEARCH,STILL,SLOW,STOP,PLAY, and REC modes) (5V : EJECT,REW, and INITIAL modes)
10	FL- START + SAFETY SW	I	Switch input indicating start of cassette loading or discharge by cassette mechanism and detecting accidental erasure prevention tab of cassette tape.
11	-	-	-
12	RESET	I	Initial reset terminal for this IC.
13	CLK 1	-	Clock OSC during power failures.
14	CLK 2	-	Frequency is 32kHz.
15	VSS	-	Ground terminal
16	CF 1	-	IC clock OSC terminal.
17	CF 2	-	Frequency is 6.5MHz.
18	VDD	-	IC power supply terminal.(5Vdc)
19	T. END S.	I	Sensor signal input for tape end detection.
20	T. TOP S.	I	Sensor signal input for tape beginning detection.
21	T. REEL S.	I	Pulse input for detection of take-up reel table rotation.
22	POS SW1+2	I	Data indicating operation position of mechanism. (2V: EJECT,REW ,and INITIAL modes)(3.4V: STOP, PLAY,REC, and F-SEARCH modes) (2.5V: STILL and SLOW modes) (5V: R-SEARCH mode)
23	TAPE SPEED	I	Input of result of tape speed discrimination by digital servo IC.
24	AFT - C	I	Tuner AFT S-curve signal input for tuner AFT control.
25	ENV.	I	Video head envelope detection signal input for ATR function.
26	HiFi ENV.	I	Hi-Fi audio head envelope detection signal input for ATR function. (Hi-Fi model only)
27	WIDE ASPECT IN	I	Wide aspect video system indication signal input.
28	WIDE ASPECT ON	O	Video wide aspect system selection signal.
29	POWER DOWN	I	Power failure detection terminal.
30	SHORT TEST	I	REC mode indication signal input (REC 12V).
31	C - FG P.	I	FG signal input of capstan motor.
32	-	-	-
33	CTL P.	I	CTL head recording / playback pulse signal input.
34	-	-	-
35	RF SW P.	I	RF switching pulse input, created by head drum PG.
36	REMOCON	I	Remote control signal input.
37	AFT MUTE	O	"H" output during TU AFT mute. (V-syn model only)
38	G9	O	Display grid outputs (FLD).
39	G8	O	
40	G7	O	
41	G6	O	
42	G5	O	
43	G4	O	
44	G3	O	
45	G2	O	
46	G1	O	
47	VDD	-	IC power supply input.(5Vdc)
48	V LOAD	O	-23V input for FLD drive.
49	SEG l	O	Display segment outputs (FLD). (Includes key-scan output)
50	SEG k	O	
51	SEG j	O	
52	SEG i	O	

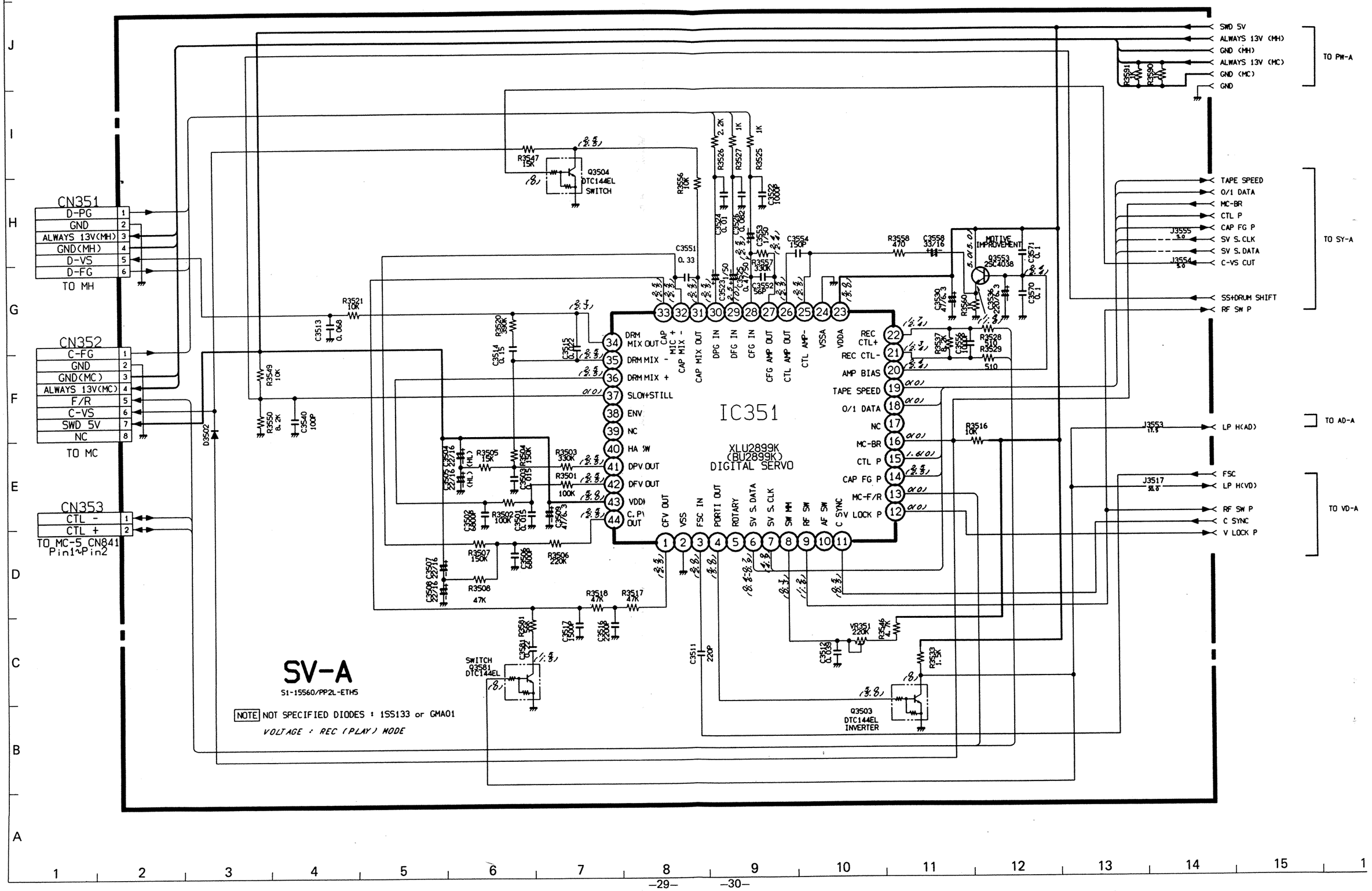
No.	Name	I/O	I/O Signal Function
53	SEG h	O	Display segment outputs (FLD). (Includes key-scan output)
54	SEG g	O	
55	SEG f	O	
56	SEG e	O	
57	SEG d	O	
58	SEG c	O	
59	SEG b	O	
60	SEG a	O	
61	MOD PAL BG	O	Signal for RF output TV-system setting. (PAL-B/G)
62	MOD PAL I	O	Signal for RF output TV-system setting. (PAL-I)
63	TEST SIGNAL	O	Signal for RF test signal output.
64	TUNER SOUND	O	TV system indication signal output.(PALI H / others L)
65	KEY IN 0	I	Operation key data inputs.
66	KEY IN 1	I	
67	KEY IN 2	I	
68	KEY IN 3	I	
69	-	-	-
70	DMSS LED	O	Signal for indicating DMSS mode.
71	PAL L	I	PAL mode indication signal input.
72	-	-	-
73	SV S. DATA	O	Output 8-bit X 4 serial data giving operation mode and tracking data,etc., to digital servo IC.
74	OSD CS	O	Chip enable (access) signal output to OSD IC.
75	SV S. CLK	O	The clock pulse for digital servo IC.
76	COMMON DATA	O	Terminal for communication of respective data with OSD IC,DMSS IC,and CH+ IC.
77	I2C S.DATA	I/O	Data exchange with tuning memory,HiFi,VPS,PDC, MTS and NICAM decoder IC.
78	COMMON CLK	O	The clock pulse for HiFi,OSD,CH+,tuning memory, PDC,VPS,MTS and NICAM IC.
79	INPUT SEL A	O	Signal to select audio input source.(except HiFi set)
	TUNER A MUTE	O	Signal for disable the tuner audio signal.(HiFi set)
80	PLL CS	O	Chip enable signal output to tuner PLL tuning system IC. (F-syn model)
	TU PWM	O	Tuning voltage output (PWM signal). (V-syn model)
81	BAND 1	O	Tuning band data(BAND 1 and 2 ; for V-syn model).
	PLL DATA	O	Data exchange with tuner PLL IC (for F-syn model).
82	BAND 2	O	BAND 1 and 2 ; (L,L)=VHF-LOW (L,H)=VHF-HIGH (H,L)=UHF (H,H)=SKIP. (for V-syn model)
	PLL CLK	O	The clock for PLL IC of tuner unit (for F-syn model).
83	CH PLUS CLK	O	The clock pulse for CH+ in/out-select IC.(CH+ model)
	AV CTL	O	Audio input source selecting for audio IC.
84	NAP H	O	"H" output during NTSC (NAP) playback mode.
85	50 / 60	O	"H" output during 60 field mode.
86	DMSS CLK	O	Clock signal for audio DMSS unit.
87	INPUT SEL V	O	Signal for selecting video input source.
	FSS IN	I	CH+ mode control signal input (CH+ model).
88	AV1/AV2	O	Signal for selecting AV-input(video/audio)source/
89	VSS	-	IC ground terminal.
90	VDD	-	IC power supply input.(5Vdc)
91	STILL+SLOW+X2S	O	STILL, SLOW, or X2speed modes indication.
92	SPECIAL PLAY	O	Signal to indicate CUE, REV, STILL and SLOW modes.
93	-	-	-
94	NORMAL REC	O	Signal for indicating normal audio recording.
95	REC H	O	Signal for indicating recording mode.
96	PB H	O	Signal for indicating playback mode.
97	A MUTE+TU A MUTE	O	"H" output for disable audio output signal.
98	POWER UP	O	"HIGH" output except when power is off. Indicating that power is ON.
99	ML- S	O	Loading motor rotation speed (low / medium / high) indication signal.
100	ML- D	O	Loading motor rotation direction (FWD / REV) indication signal.

PP_TTS

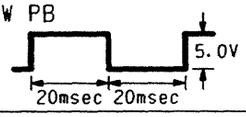
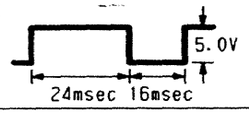
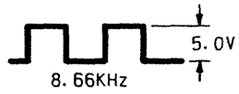
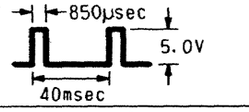
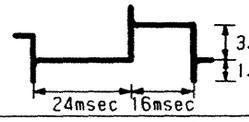
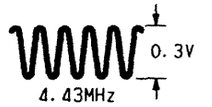
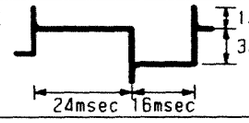
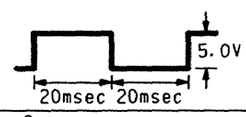
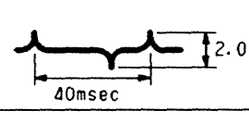
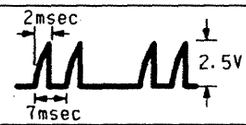
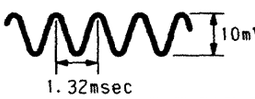
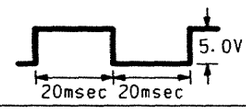
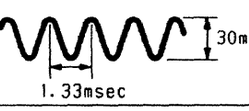
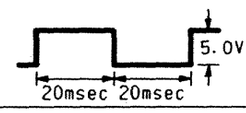
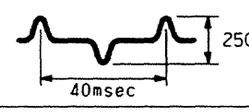
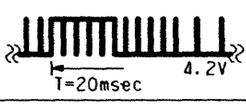
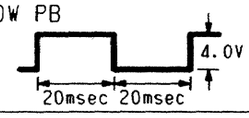
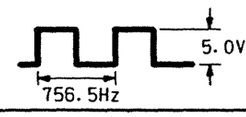
CP-1 BOARD (SY-A) SYSTEM CONTROL



CP-1 BOARD (SV-A) SERVO



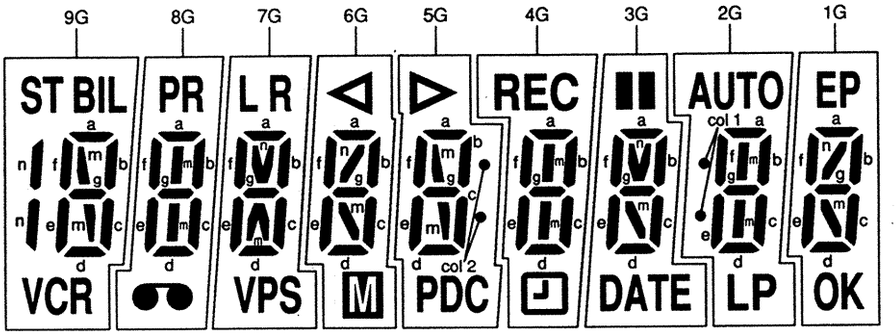
SERVO CIRCUIT WAVEFORMS (IC351:BU2899 Series)

TEST LOCATION	WAVEFORM & MODE/LEVEL	TEST LOCATION	WAVEFORM & MODE/LEVEL
Pin 40 (H. A. SWITCHING)		**Pin 15** (CTL PULSE)	
Pin 42 (PWM)		**Pin 15** (CTL PULSE)	
Pin 41, 44, 1 (PWM)		**Pin 21** (CTL HEAD-)	
Pin 3 (FSC INPUT)		**Pin 22** (CTL HEAD+)	
Pin 5 (ROTARY)		**Pin 26** (CTL AMP OUT)	
Pin 8 (D-PG MM)		**Pin 28** (C-FG INPUT)	
Pin 9 (RF SW PULSE)		**Pin 29** (D-FG INPUT)	
Pin 10 (AF SW PULSE)		**Pin 30** (D-PG INPUT)	
Pin 11 (COMPOSITE SYNC INPUT)		**Pin 38** (ENV. SW INPUT)	
Pin 14 (C-FG PULSE)			

WF-S-PP

A7101 DISPLAY (FLD) GRID/ANODE ASSIGNMENT DRAWING & TABLE

GRID & SEGMENT ASSIGNMENT

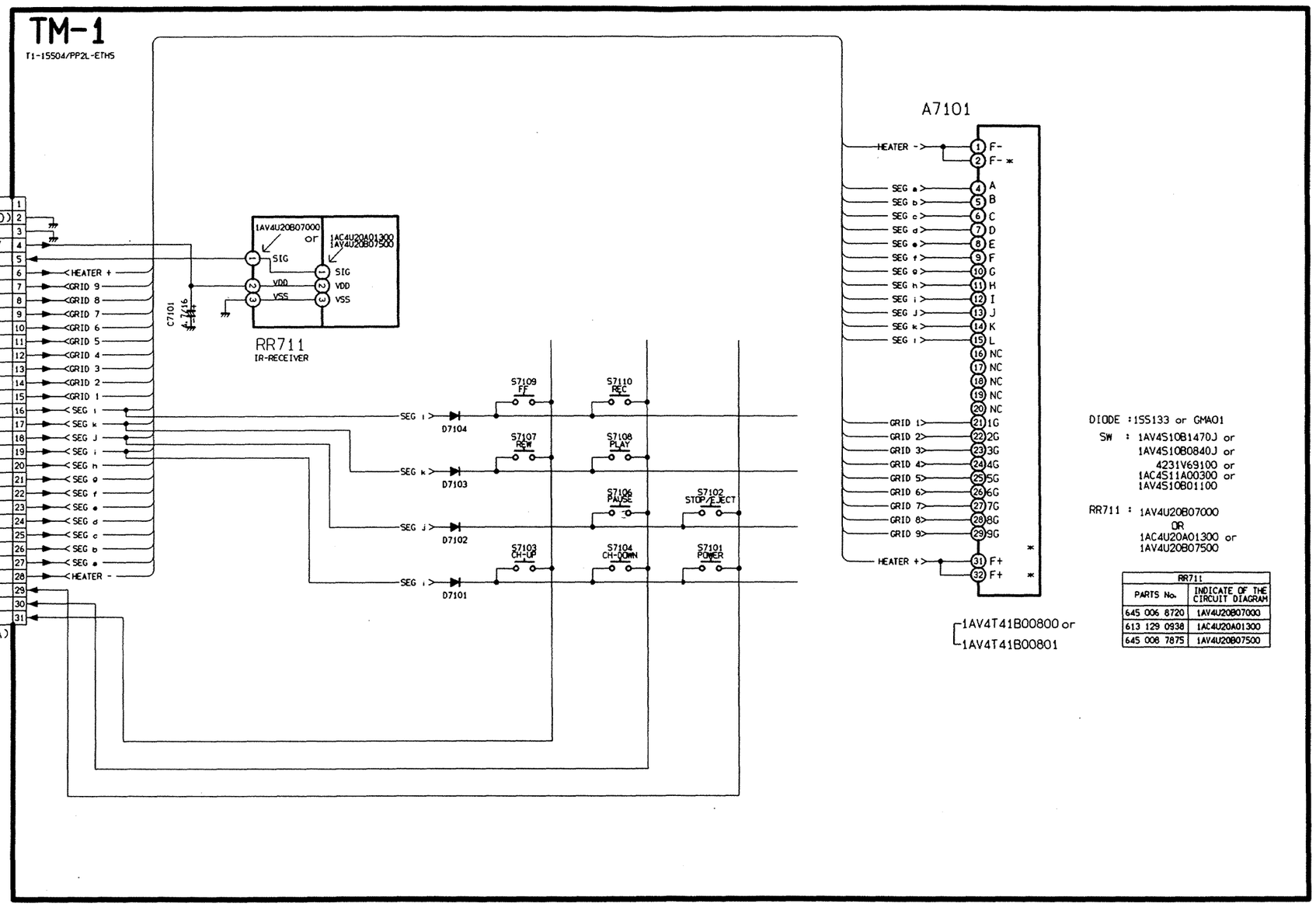


ANODE CONNECTION

GRID / SEGMENT	9G	8G	7G	6G	5G	4G	3G	2G	1G
a	ST	PR	L	◁	▷	REC	▮▮	AUTO	EP
b	n	—	n	n	—	—	n	—	n
c	a	a	a	a	a	a	a	a	a
d	b	b	b	b	b	b	b	b	b
e	c	c	c	c	c	c	c	c	c
f	d	d	d	d	d	d	d	d	d
g	e	e	e	e	e	e	e	e	e
h	f	f	f	f	f	f	f	f	f
i	g	g	g	g	g	g	g	g	g
j	m	m	m	m	m	m	m	m	m
k	BIL	—	VPS	—	col 2	—	—	col 1	—
l	VCR	👓	R	M	PDC	↵	DATE	LP	OK

GR-00800

TM-1 BOARD OPERATION KEY & DISPLAY



RR711	
PARTS No.	INDICATE OF THE CIRCUIT DIAGRAM
645 006 8720	1AV4U20B07000
613 129 0938	1AC4U20A01300
645 008 7875	1AV4U20B07500

TM-1 P.W.B.